Aviation Safety Mishap Investigation Guide

AVIATION SAFETY MISHAP INVESTIGATION GUIDE

A. Introduction. The USCG Aviation Safety Program's objective is to prevent mishaps by identifying and eliminating hazards before they cause injury or damage. A mishap is a failure of these prevention efforts and invokes the mishap investigation process to find the hazard(s) that precipitated the mishap and to recommend corrective action to prevent recurrence. The spirit of a safety investigation is evidence gathering, deliberation, determining causes and corrective actions. The underlying process is logical and familiar: observation, synthesis, and conclusion.

1. This Guide provides the basic information necessary to conduct a formal mishap investigation. The purpose of this Guide is to assist the President of a Mishap Analysis Board (MAB) in setting up and coordinating the MAB process.

2. This Guide will assist an MAB President by discussing activities surrounding a "worst-case" mishap (aircraft strike damage with fatalities). Widely differing circumstances in each mishap preclude assigning a one-size-fits-all solution. The investigation must be tailored to fit the mishap circumstances. This Guide is made up of checklists, reminders and discussions of the tasks, topics and problems encountered during an aircraft investigation.

3. In principle, the MAB President needs only an inquiring mind, a penchant for small-group leadership and project management skills.

4. This is the *fifth* edition of the MAB or President's Mishap Investigation Guide (formerly the Senior Member Guide). Recommendations for improvement to the Guide are invited and encouraged.

5. This Guide does not replace policies contained in the current version of the Safety and Environmental Health Manual (COMDTINST M5100.47 (series)) but supports and supplements the policies and principles provided therein. Sections of the Safety and Environmental Health Manual (SEH Manual) that should be used in conjunction with this Guide include:

   a. Chapter 2 Aviation Safety Program.

   b. Chapter 3 Mishap Response, Investigation and Reporting.

   c. Enclosure 2 Mishap Analysis Report (MAR) Format.

   d. Enclosure 3 The Medical Officers Report.

   e. Enclosure 4 Mishap Analysis Board (MAB) Appointment, Composition and Procedures.

   f. Enclosure 10 Limitations on the Use and Disclosure of Mishap Investigations and Reports.

B. Appointing and Convening of MAB. COMDT (G-WKS) is the appointing and convening authority for all Class A and Class B Mishap Analysis Boards. The obvious reasons for assigning an MAB to investigate a mishap are to identifying the causes and making recommendations to prevent reoccurrence.

1. COMDT (G-WKS) may delegate this responsibility to the reporting custodian or an officer in the chain-of-command senior to the reporting custodian if it is

deemed a Commandant MAB is not warranted. In these cases COMDT (G-WKS) will specify the scope and level of documentation of the investigation.

2. MAB's may vary in composition according to the seriousness/complexity of the mishap and the type of report required. COMDT (G-WKS) will determine the composition of the MAB.

3. Mishap Analysis Board Appointment and Composition. See Enclosure 4 of the SEH Manual

4. Unit Permanent Mishap Board. The President of the Unit's Permanent Mishap Board must take the necessary steps in accordance with the unit Pre-Mishap Plan and Chapter 3 of the SEH Manual. The Unit MAB president will continue the MAB process until relieved by the Commandant appointed MAB.

5. The formal MAB process can be applied to unit level investigations for Class B, C or D mishaps, or in order to exercise the Unit Permanent Mishap Board.

C. Extent of Investigation Efforts. The extent of investigation efforts should be tailored to the complexity and severity of each mishap. Factors influencing the scope of an investigation include severity of injury, extent of the property loss, probability of adverse public reaction, and future mishap potential. The convening authority determines the depth of investigative effort required for each mishap and the type and the composition of the Mishap Analysis Board to be assigned.

D. Types of Investigations.

1. The Commandant appointed MAB investigation is considered the foremost USCG investigation and its analysis normally determines the official Coast Guard statement of mishap causes and corrective actions. Other investigations may be conducted at the same time as the Commandant appointed mishap investigation.

2. Except in mishaps where the National Transportation Safety Board exercises its power after a mishap involving military and civilian aircraft, the Coast Guard Safety Mishap Analysis Board (MAB) investigation takes priority over all other investigations (including CISD activities) in interviewing witnesses, obtaining and analyzing evidence, and inspecting the scene of the mishap.

3. Other types of safety mishap investigation boards.

   a. Commandant Appointed Unit Level MAB For Class B Mishaps. When COMDT G-WKS-1 does not convene a formal MAB investigation, the composition of the unit level investigation board shall be directed by the Commanding Officer. Ad hoc members from outside the mishap unit may be requested and will be provided by G-WKS-1. G-WKS-1 will determine the type of documentation and review required. Generally an aviation mishap message is sufficient.

   b. Commandant Appointed Class C and Class D MAB. The cognizant Commanding Officer shall normally be the appointing and convening authority for Class C and Class D mishap investigations. However, for Class C or Class D incidents having broader mishap potential, indicating a potential flaw in fleet-wide equipment, procedures or training or an incident deserving senior management scrutiny, COMDT (G-WKS-1) may convene a full or partial MAB. A written convening order is not required.

COMDT (G-WKS-1) will determine the composition of the MAB, the type of report and the review chain. Depending on the circumstances, these MAB's usually include one to three members. MAB members need not be senior to the personnel involved or the air station Commanding Officer. A Flight Surgeon or Medical Officer shall be assigned to mishap analysis boards involving injuries or human factors events.

c. The Unit Permanent Mishap Board generally investigates Class C and D mishaps. These informal investigations may extend safety privilege as required with associated disclosure safeguards. See Enclosure 10 of the SEH Manual

d. Joint Service Investigations. When resources from more than one military service are involved in the same mishap, the services normally appoint one board consisting of members from each involved service. The Memorandum of Understanding (MOU) Among the USA, USAF, USMC, USCG and USN for Safety Investigation and Reporting Joint Services Mishaps (dated 24 May 2001) governs these investigations. As all military services share the same concepts of safety privilege, a Joint Service Investigation Board may employ it. All involved services will receive copies of the resulting analysis report. The presence of a Joint Service Board does not preclude individual services from convening their own investigation boards.

e. USCG Auxiliary Aviation. The NTSB is required by law to investigate **all** Coast Guard Auxiliary Class A or B aircraft mishaps. The Coast Guard will generally assign a Flight Safety Officer and an Auxiliary Member to assist the NTSB. The Coast Guard may elect to convene a concurrent MAB. See Auxiliary Operations Policy Manual Air Auxiliary COMDTINST M16798.3 (series) for reporting Class C and D mishap.

f. FAA/NTSB Participation. National Transportation Safety Board (NTSB)/Federal Aviation Administration (FAA) may request or elect to investigate or participate in any Coast Guard mishap investigation. Procedures governing such participation are contained in Participation in a Military or Civil Aircraft Accident Safety Investigation (AFI 91-206(I), OPNAVINST 3750.16C, COMDTINST 5100.28A, and AR 95-30

g. NTSB Investigations. Any mishap involving both civil and military resources is required by law to be investigated by the NTSB as the primary investigative agency. There will generally be a concurrent military investigation. A military coordinator will normally be assigned by COMDT (G-WKS-1) to provide liaison between the two boards. When possible the military coordinator should be a sworn member to the NTSB investigating body.

4. Administrative/Legal Investigations. For every instance in which a mishap results in death, serious injury, extensive Government property damage, or there is a possibility of a claim (either by or against the Government), an appropriate fact-finding body shall be ordered to determine the cause and responsibility for the mishap.

a. There should not be an adversary relationship between the MAB and the legal board or any other investigation resulting from a mishap. Factual evidence must be shared. Lists of those persons interviewed, a complete set of non-privileged photographs (those not showing MAB deliberations or re-creations), and all records, logs, logbooks and other records should be made available to the fact-finding body as soon as possible. See Enclosure 10 of the SEH Manual and Checklist #14 for guidance on sharing of materials.

b. Privileged witness statements, the MAB's deliberations, and analysis of the evidence used to arrive at the mishap causes and recommendations must not be disclosed to the fact-finding body. See Enclosure 10 of the SEH Manual and Checklist #13 for more details on privilege.

E. Mishap Classification/Cost/Types. This information is contained in Chapter 3 of the SEH Manual.

F. Mishap Analysis Boards (MAB). See Enclosure 4 of the SEH Manual for MAB appointment, convening, composition and selection of the MAB members. Generally Class A and Class B MAB's are comprised of the following voting members (as appropriate):

1. A MAB President, senior to the personnel involved in the mishap and not in the mishap unit's chain-of-command. The MAB President need not be senior to the air station Commanding Officer.

2. An Engineering Officer qualified in the mishap aircraft.

3. A Flight Surgeon or Medical Member (FS/MO) if personnel injuries or human factors issues are involved.

4. A Flight Safety Officer (FSO) qualified in the mishap aircraft type. Each MAB must have a recent school-trained FSO to coordinate and provide the depth of knowledge in investigation techniques necessary for a thorough investigation.

5. Aviation Standardization Instructor Pilot and generally an Enlisted Standardization member qualified in the mishap aircraft type.

6. A senior Aviation Survival Technician (AST) should be assigned to all aviation mishaps involving aircrew injuries, fatalities, or incidents where aviation life support equipment was used or should have been used.

7. Additional Assistance. COMDT (G-WKS-1) may appoint or the MAB President may request additional assistance through COMDT (G-WKS-1). Possible optional non-voting members:

a. Administrative (SK or YN) assistance and equipment.

b. Aviation Engineering Officer (CWO/CPO) assistance (G-SEA).

c. Additional FSO (who was on a previous MAB to assisted) (G-WKS-1).

d. Surface Operations member for ship helicopter mishap (G-WKS-4).

e. Fire Protection member for mishaps involving Fire/Fire Protection (G-WKS-2).

f. Subject Matter Expert for mishaps involving environmental or HAZMAT issues (G-WKS-3).

8. The initial convening message and subsequent messages appointing additional members/technical advisors will clearly state whether the individual is a voting or nonvoting member. To promote optimal team dynamics, voting membership is generally limited to eight or fewer individuals.

9. Non-Coast Guard Personnel Members. See Enclosure 4 of the SEH Manual for other MAB members.

10. Prohibited Members. See Enclosure 4 of the SEH Manual for prohibited MAB members.

G. WKS-1 Advisor. A WKS-1 staff member will be sent to assist during the initial setup of an MAB and provide technical assistance during the first few days of the investigation. The G-WKS-1 advisor is not a voting member of the MAB and shall not be involved in direct MAB deliberations. See Checklist # 29.

1. The primary function of the WKS-1 Advisor is to assist and serve the MAB. The WKS-1 Advisors are experienced in recognizing, collecting, and analyzing hardware and software consequential to aircraft mishap investigations. They are familiar with the resources available to support the MAB's efforts. They provide the MAB with immediate experience in addressing issues like nonvolatile memory, crew resource and operational risk management, and flight dynamics. In all their duties, their overriding concern is to provide needed answers and support to the MAB.

2. A WKS-1 Advisor will generally be dispatched for a fatal or other Class A flight mishap where wreckage is available. In cases involving wreckage lost at sea or otherwise not readily accessible, a WKS-1 Advisor will not normally be dispatched until the wreckage is salvaged.

3. The dispatch of a WKS-1 Advisor is always announced via USCG message to the appropriate commands and units. The message identifies the investigator's level of security clearance, itinerary, and intent. The same information will also be conveyed through less formal means such as telephone calls or electronic mail.

4. When a WKS-1 Advisor does arrive at a mishap site, they are on site to provide any assistance to the unit and the MAB. They are not to assume control of the MAB, conduct the actual investigation or to participate as a member of the MAB.

H. Logistics Support.

1. The USCG Aviation Safety Division (COMDT (G-WKS-1)) can provide liaison with other USCG headquarters offices and the other military Safety Centers for MAB support. The Aviation Safety Division also maintains the AVIATRS database, which contains extensive USCG mishap information that can be queried by occurrence, model, type or other criteria.

2. When uncertain on who to call or where to turn, call the Aviation Safety Division. They have probably encountered a similar problem and know a resource. Examples are: Armed Forces Institute of Pathology, Coast Guard Research Laboratory, Federal Bureau of Investigation, Federal Aviation Administration and National Transportation Safety Board and various safety centers.

3. The Aviation Safety Division will also coordinate analysis and animation of flight data and voice recorders. Data retrieved from recording devices is factual information when presented without alteration in tabular or graph format. Reconstruction and simulation might involve subjective manipulation and data smoothing, resulting in a privileged product. In other words, the MAB may share with the AIM investigator the raw content of any recording device successfully downloaded, but might have to protect an computer animation of the flight/voice data as privileged. See Checklist # 28.

4. Mishaps At Home Unit or unit nearest the mishap, if a unit other than the mishap unit, will be designated as the host for the MAB. The host unit will provide support to the MAB including clerical and other personnel as required; office space with secure storage capability; communications; transportation; shelter for the security crew, cell phones, IRM support, specialized clothing; medical support for the field portion of the investigation; etc. See Chapter 2 of the SEH Manual.

5. Mishaps Away From Home Unit. When a mishap occurs off base or away from the mishap unit, other military facilities may be able to provide reasonable support to the MAB (contact COMDT (G-WKS-1)). The mishap unit FSO should have a list of equipment typically required with procedures and contact points as part of the unit Pre-Mishap Plan).

6. MAB Funding. Funding information for MAB travel and other expenses comes from COMDT (G-WKS-1) in the appointing message. Minor costs, like film developing, reproduction costs and other small supplies, can be reimbursed on the final travel claim of the President or the FSO member. Unusual costs (such as snow cats, civilian security guards, heavy equipment, etc.) are best handled by contacting COMDT (G-WKS-1) and letting them work the request through Headquarters. Remember, you are not an authorized contracting officer.

I. Recovery and Salvage of Mishap Aircraft. The recovery and salvage of a mishap aircraft and the assignment of a salvage officer are the responsibility of the reporting custodian (normally the Commanding Officer of a Coast Guard aviation unit or Coast Guard cutter with a deployed helicopter). Headquarters support is available for coordinating assistance from other services or agencies, technical information, exceptional funding requirements, etc., which are beyond the capability of the individual unit or district. The Aeronautical Engineering Management Manual (COMDTINST M13020.1 (series)) further defines specific command, district, area and headquarters responsibilities for the various elements of the salvage/recovery effort. It also contains a list of reference material pertaining to helicopter salvage and recovery.

J. Grants of Confidentiality. To advance the purpose of mishap prevention, investigation procedures should encourage fullest and widest disclosure of all relevant information. Safety investigators may give a promise of confidentiality to encourage frank and open communications to individuals providing information to the MAB. Grants of Confidentiality may be extended, if it is believed, that without an offer of confidentiality, the individual will not provide a candid statement. See Enclosure 10 of the SEH Manual for more detailed discussion.

1. These promises must be explicit, in writing or spoken at the beginning of a recorded statement, and are not implied from the investigator's status or function.

2. A "Witness Statement Promise of Confidentiality Advisory Form" shall be attached to each witness statement. The safety investigator must document all instances in which a witness gives a statement pursuant to a promise of confidentiality. These promises should only be given as needed to ensure forthright cooperation of the witness concerned. See Figure 2-1 in Enclosure (2) of the SEH Manual or Checklist # 27.

3. The witness will be told that the promise only applies to information provided by the witness for the safety investigation (even if the witness provides the same information to another investigation board). In each instance, the promise of confidentiality will be strictly limited to only the information provided directly by the witness to the MAB for the safety investigation, after the promise was extended.

4. Individuals interviewed by the MAB will not testify under oath. If a witness is granted a promise of confidentiality by the MAB, they should be advised their statement (oral or written) will not be used in any administrative, punitive or legal action without their consent.

5. Promises of confidentiality will be granted individually (on a witness by witness basis) and may not be given automatically or on a blanket basis to all witnesses interviewed.

6. Promises of confidentiality only apply to Coast Guard employees (active duty, reservist, civilians, other government employees or NAFA employees). Non Coast Guard and non-Government employees are not covered and cannot be granted a promise of confidentiality.

7. Coast Guard contractors may be offered and granted a promise of confidentiality, if prior arrangements have been made with the Contracting Office Technical Representative (COTR). All requirements of this section will apply.

8. Verbatim transcripts of interviews shall not be made. Interviewer notes are sufficient for inclusion in the MAR.

9. A list of all witnesses interviewed shall be include in the Mishap Analysis Report annotating whether each individual was offered and accepted (or declined) the promise of confidentiality.

K. Investigating Potential Criminal Acts (Including Sabotage). If the MAB discovers evidence of a crime or that the mishap was caused by misconduct, they must immediately stop the safety investigation and report this fact to COMDT (G-WKS-1). G-WKS under consultation with G-LGL will determine whether the safety investigation should be terminated and an appropriate criminal investigation initiated. If this happens, safety investigators must not disclose any privileged information to the criminal investigators.

1. No further offers of confidentiality may be granted.

2. If the determination is made to terminate the safety investigation;

   a. The MAB President shall give all nonprivileged material to the criminal investigators.

   b. Provide the names of all known witnesses including those already interviewed by the MAB.

3. The MAB President will ensure all privileged information is safeguarded and preserved.

4. The safety investigation of specific issues may continue, but shall be subordinate to the non-safety investigation.

5. If the criminal investigation concludes the mishap is the result of a criminal act, a safety investigation will not be conducted.

6. If a criminal act did not occur, COMDT (G-WKS-1) will determine whether the MAB should continue the investigation.

L. Review of the Mishap Analysis Report. When the MAB has reached its conclusions and the report is ready for signature, all the MAB members should review the final product for concurrence and completeness. During the review, it is proper to assure correct spelling, grammar, etc., of the report. However, it is more important that the main body of the report be correct. Persons in the reviewing chain tend to judge the report by its content, not its appearance. Don't spend an inordinate amount of time making the witness statements, notes, engineering reports, etc., perfect. These should be complete and readable.

M. Submission, Forwarding and Distribution of the Mishap Analysis Reports (MAR).

1. The Formal Mishap Analysis Report shall be submitted for initial review and endorsement to the Commanding Officer per Enclosure 2 of COMDTINST M5100.47 of the SEH Manual.

2. A copy of the MAR on disc shall be forwarded with the advance copy to COMDT (G-WKS-1).

3. Each endorser shall include the original endorsement in the MAR and provide an electronic copy of endorsements to COMDT (G-WKS-1).

4. Labeling/Submission/Forwarding/Mailing/Distribution. Instructions for handling MAR's are outlined in Enclosure 2 of the SEH Manual.

5. Only the Unit Commanding Officer and President of MAB shall retain a copy of the MAR. The CO's copy and the President's copy of the MAR, as well as all related tapes, photographs, notes and other documents will be forwarded to COMDT (G-WKS-1) after the CCS Final Action Letter is signed. See Enclosure 2 of the SEH Manual for details.

6. No endorsers or MAB members are allowed to retain copies of the MAR. See Enclosure 2 of the SEH Manual for details.

N. Number of Copies. Because mishap reports contain sensitive and privileged material, it is imperative the reports be controlled. Therefore, only a limited number of copies and copyholders are authorized. The President is the only MAB member authorized to keep a MAR copy during the review process. Reviewers in the chain are not authorized to hold a copy, and shall not be provided or reproduce a copy, unless requested of and authorized by COMDT (G-WKS-1). See Figure 2-2 of Enclosure 2 of the SEH Manual for specifics. COMDT (G-WKS-1) maintains the original copy of the MAR's. The original MAR and all copies (including the MAB President's) are to be returned to COMDT (G-WKS-1) for destruction after the Final Action Message is released.

O. Final MAB Message. A final MAB message shall be sent when the MAB concludes the on site investigation and analysis. Because the final MAB process is not complete at this point, COMDT (G-WKS-1) shall be the releasing authority for the message. The MAB President shall confer with and receive COMDT (G-WKS-1) permission prior to release.

1. The MAB final message report shall contain:
    a. A short factual synopsis of the event.
    b. Date the MAB adjourned.
    c. Description of damage.
    d. Disposition wreckage and/or status of salvage operations.
    e. Specific recommendations the MAB feels should be brought to the immediate attention of field commands.
    f. The message shall NOT contain opinions or speculation regarding the mishap. The MAB final message is a pre-decision document.
2. Upon receipt of the Final MAB message, COMDT (G-WKS-1) shall notify the reviewing chain of the endorsements deadlines contained in the Safety and Environmental Health Manual. Upon request, COMDT (G-WKS-1) will provide a briefing to the endorsement chain to facilitate timely review.

P. Command and Reviewers Brief. The Mishap Unit Commanding Officer, any endorsers and the Commandant's CASB may request a briefing by the MAB President as part of the review process.

1. COMDT (WKS-1) will provide guidance and assistance in coordinating the brief.
2. Although many of the items/exhibits contained in the report are useful in the briefing, other aids, items, or exhibits may be necessary to support the briefing (35mm color slides, viewgraphs, hardware, etc). Consider these possibilities during the investigation phase.
3. Depending on command guidance, fiscal constraints, or the specifics of the mishap, other MAB members may accompany the MAB President.

Q. Time Limits. Timely review of the Mishap Analysis Report is a critical process in preventing future mishaps. Delays at this stage can result in further loss and/or injury. See Chapter 3 and Enclosure 2 of the SEH Manual for more guidance.

1. The MAB President shall submit the MAR to COMDT (G-WKS-1), via the Commanding Officer and the appropriate chain of command, **within 21 workdays** after the MAB completes the investigation and analysis.
2. COMDT (G-WKS-1) must approve extension of deadlines.
3. Unit Commanding Officer shall notify COMDT (G-WKS-1) when finished. COMDT (G-WKS-1) shall advise endorsing chain via message of the associated deadlines and requirements for timely review via message
4. MAR reviewers shall review, endorse and forward the MAR via the chain of command **within fifteen workdays of receipt**.

5. MAR reviewers shall notify COMDT (G-WKS-1) of completion and provide an electronic copy of the endorsement.

R. Delays. Timely dissemination of mishap information is critical to the Coast Guard Safety Program and very important to personnel in the field. In the event the review cannot be completed and/or the report cannot be forwarded within the prescribed period, COMDT (G-WKS-1) shall be notified via message to request an extension.

S. Disposal of Wreckage and Other Materials. The MAB President shall take the following actions with MAB materials:

1. Keep all evidence not turned over to the legal board until after the G-CCS Final Action Message is released.

2. Keep Coast Guard equipment that is damaged beyond repair until all investigations indicate it is no longer needed.

3. Turn wreckage over to the legal investigation. Ensure the legal investigation knows the wreckage is available and acknowledges custodial responsibility. Notify COMDT (G-WKS-1) and the unit Commanding Officer of the transfer. If the legal investigation does not need the wreckage, notify COMDT (G-SEA) for disposition. If necessary, the unit legal officer will maintain custody pending arrival of the legal investigation board.

4. Provide all nonprivileged evidence to the legal investigation board.

5. Return all original documents and records to their proper custodian, after making necessary copies.

6. Carefully control privileged documents and evidence. This includes:

   a. Witness statements and interviews (written or recorded).

   b. Anything acquired from contractor representatives under a promise of confidentiality.

   c. Drafts indicating MAB analysis deliberations or conclusions.

   d. Privileged photographs, films, and videotapes (including annotated, staged, reconstructed, or simulated reenactments of possible or probable scenarios developed by or for the MAB). Any photograph annotated with arrows, circles, rulers or other markings are considered privileged (unless the markings can be removed). Captions and markings that are speculative or indicative of the MAB's deliberative process are privileged (not the photograph).

   e. Diagrams and other exhibits.

7. Minimize working documents generated by the MAB. Documents acquired or created by the MAB, but not used as enclosures, should be destroyed along with any excess privileged materials not needed for the formal report. This applies to notes, statements, photographs, diagrams, videotapes and tape recordings and the like. Drafts of the report are obsolete and should be destroyed. If there is a need to retain any document for briefing purposes, place such documents in a folder marked *"MAB privileged investigation materials"*. The MAB President shall retain and safeguard the material until the G-CCS Final Action Message is

released and then it shall be destroyed. Delete information stored electronically in a computer.

8. Return usable personal equipment or protective gear from the mishap crew to the issuing authority as soon as possible, after all investigators have completed their examination. Clearly mark the item to indicate its involvement in a mishap to ensure the necessary inspections are accomplished prior to reissue.

9. Flight equipment worn by a deceased airman is not to be stored with wreckage or released as personal effects, but should be destroyed, after all investigators have completed their examination.

10. Disposition of autopsy reports/photographs and TOX test results shall be handled in accordance with Chapter 4, the Medical Manual COMDTINST M6000.1 (series) Contact COMDT (G-WKH-1).

11. The wreckage/physical evidence of the mishap becomes the responsibility of the command. Once all investigations are finished with the wreckage, the unit should contact G-SEA for disposal. Only COMDT (G-WKS-1) shall grant exceptions to this policy.

12. Other MAB members, mishap crewmembers or unit personnel shall not retain any material.

13. Aircraft logs and records should be passed with custody of the wreckage to the reporting custodian.

14. Service, health and training records, and flight logs for missing or deceased personnel should be handled according to Enclosure 2, Military Personnel Data Records (PDR) System of COMDTINST M1080.10 (series).

CHECKLIST #1--Initial Actions and Getting Started.

A mishap has occurred. An aircraft is down. You have been appointed the President of the Mishap Analysis Board (MAB). Competing demands erupt, and it seems everyone is looking to you for answers and action. Transfer work to an able assistant. Tell Schedules you are out until further notice. And go!

When you cut the cord, mean it. If you relent and establish the precedent that you are accessible for routine matters, old business will follow and compete for attention.

Mishap investigation responsibilities of all MAB members shall take precedence over **all other** duties.

You now work for the appointing authority.

The following is written for a Commandant appointed MAB, but can be tailored for use with other mishap investigations.

The Unit Permanent Mishap Board will commence many of the initial actions discussed while waiting the arrival of the Commandant's MAB. Keep in mind, the MAB President, may not be assigned or show up immediately, it maybe 72 hours or more.

Come as You Are.

Time will be too much at a premium to attempt remedial training. When the crash alarm sounds, the unit will execute a pre-mishap plan already rehearsed, or it will undergo trial-by-fire.

The President's charter is to guide the MAB in accomplishing the investigation and writing the report. You do not have to become an instant expert in investigation, Engineering, operations or medicine. An MAB President has to deliver what is expected of seniority and experience: focus, objectivity and leadership to marshal others' activities to an end.

In time, collective efforts will reveal a substantial body of information from which the MAB can synthesize an explanation of the mishap and recommend what Coast Guard aviation should do about it.

If you take over the mishap investigation from the unit permanent mishap board, rapidly assess what was done and what needs to be done. MAB duties or tasks should be distributed to each member to accomplish separately, but in a context of coordinated action. Prioritize or redistribute tasks as you see fit; add to them as necessary.

MAB Management and Organization.

The atmosphere surrounding a mishap may be chaotic. In most instances, a mishap investigation can and should proceed without impeding the mishap unit's continuing operations. Get your bearings, then go to work. See checklist #2.

Determine what needs to be done immediately, what has already been done, what can be done, how and by whom. Do not dwell on the difficult or impossible; take these as a cue you need (external) help in some capacity. See Checklist #2 and #3.

The first 24 hours are usually the most disorganized and hold the most risk for the MAB to make mistakes or miss opportunities. Organization is an important part.

Have tasks pre-planned to ensure important items get accomplished. Do not rush into things; take time to consider the down stream consequences of actions particularly pertaining to material evidence.

The most important thing to do immediately after a mishap is to recover the crew and obtain medical assistance as needed. If the crew is deceased, remove the bodies (after documentation, and by disturbing the wreckage as little as possible), and quickly get them to a facility where an autopsy can be performed and pathological specimens taken.

Avoid handling the wreckage until the entire MAB gets on scene to examine the wreckage. Use this time to take adequate photograph coverage, start a detailed wreckage diagram, determine the extent of the wreckage field, interview witnesses, and collect records.

If the wreckage has to be moved, e.g., from a runway, highway railroad, or other thoroughfare, photograph and document the entire wreckage site prior to the move.

Once the wreckage analysis has begun, plan on at least three days before moving it to another site.

Task Groups are one way of ensuring all areas are investigated. Assign one member as leader of each task group plus as many other members as necessary to provide good coverage. Individuals will also have specific tasks assigned according to their special training or experience. Members may be part of more than one group.

- Operational Task Group. Ensures that proper clearances, procedures and techniques were used and overall supervisory involvement was adequate.
- Personnel Task Group. Organize and conduct witness interviews, match-up of personnel with the mission and the adequacy of prior training.
- Material Task Group. Responsible for the investigation effort at the crash site, AR&SC or laboratory. Responsible for screening maintenance records and procedures; wreckage movement and shipment.
- Aeromedical Task Group. Investigation of crew injuries, aviation life support equipment and overall analysis of the human factors involvement.

A continuing concern for activities surrounding MAB activities is personnel and bystanders safety. There has already been a mishap---You do not want another while investigating the first.

Attention should turn early to obtaining or recording the evidence that is most perishable by human activity, frailty, or by forces of nature. Since a safety investigation usually has precedence over other investigations for access to evidence, the MAB has a duty to preserve the evidence for others, or to account for changes resulting from handling and examination. The MAB should share access to real/factual evidence (nonprivileged), whenever it is possible.

Not all evidence is privileged, nor will all sources be offered the promised confidentiality. Know the difference and treat the different types with appropriate care. See Enclosure 10 of the SEH Manual and Checklist #13.

Think outside the box. View problems from various angles. This applies to wreckage recovery, exploring the evidence, considering how things work, the order and consequence of procedures...anything.

Take notes. A pocket-sized notepad and pencil are the most essential tools a member can carry. The information and observations acquired will quickly exceed short-term memory and be lost. To prevent having to rediscover information, take notes. Starts immediately and continue until the report is finished.

Leadership by Example.

The President sets the tone for the MAB. If he applies himself diligently, the other MAB

members will follow that example. If he allows himself to be distracted by his 'real job', other MAB members will do the same.

Personnel on the periphery look to the MAB for guidance and example; they will presume you know what you're doing. If a MAB member handles evidence roughly or fails to take precautions for hazards, others will emulate.

Buzz and rumor accompany a sensational event. The MAB should not add to such activity, nor spend time chasing or refuting others' speculations. The MAB and their activities are the focus of considerable interest and attention. Be on your best behavior.

CHECKLIST #2--The First 24 Hours.

The First Day.

What happens on the first day amounts to people and agencies executing planned responses to a disaster. Think of it as the memory steps for an immediate-action emergency procedure.

The mishap unit has three immediate duties, all have precedence over MAB activity. Get medical attention for the survivors; notify the operational chain of command, usually by telephone and by message; inform the next-of-kin of those injured, missing or dead. Stand clear of unit personnel performing these essential duties.

Who's in Charge?

You are. Whether the Unit Permanent Mishap Board President awaiting relief or the Commandant appointed MAB President, the first on scene is the President for the purpose of this discussion of immediate response.

A Unit Permanent Mishap Board President is not a seat-warmer, but has authority and responsibility to direct the mishap site and the unit MAB until replaced by the Commandant appointed MAB President. They must not delay proceeding out of indecision or concern about what a relief might want. Some evidence is perishable and must be collected immediately. Do not wait for someone whose arrival may be undetermined. TAKE ACTION!

First things first. You will not solve the mystery on Day One. DO NOT TRY! The day's activity will be spent doing what needs doing: taking care of the living, putting out fires, evacuating the dead, establishing MAB presence, documenting and securing the mishap site.

Resist the temptation to rush to the mishap scene. Although the MAB will be itching with curiosity, its first response is not to scramble to the mishap site. Crash/fire/rescue, medical and security personnel constitute the first wave to a mishap site. The site will be in goods hands until you arrive.

Get a briefing from Unit Permanent MAB or the on-scene commander ASAP.

What are my priorities?

- What do I need first?
- Survivors/Autopsy?
- Wreckage?
- Deceased?
- Witnesses?
- Reports/Notifications?
- Records?
- Site Security?
- Logistics?
- Classified Info?
- Misc Reports?
- News Media?
- What is my most immediate problem?

First Day Meeting.

All members should meet prior to securing on the first day. During this meeting, all factual information should be shared. Plans will be made for all members to visit the crash site on the

following day. Specific assignments for each member will be discussed.

MAB Specific Tasks.

The best way to ensure the investigation gets off on the right foot is to have assignments for all members. The following is an example, although the unit's Pre-Mishap Plan may differ slightly. The MAB members will assume these duties from the unit permanent MAB as they arrive:

President. (Unit Permanent Mishap Board should have most of this started).

- Oversee activation of pre-mishap plan during first few hours (Unit President.).
- Proceed to duty office.
- Organize security/logistics.
- Ensure Pre-Mishap Plan initiated.
- Ensure Telephone call to Flagplot has been made. See Chapter 3 of SEH Manual.
- Act as central clearinghouse for information.
- Make arrangements for photographic services ASAP.
- Direct efforts of MAB members.
- Ensure MAB is adequately trained.
- Overall supervision of the investigation.
- Prepare twelve-hour message report.
- Determine the privileged or non-privileged nature of all evidence, statements, etc.
- Organize first day meeting.

Flight Safety Officer.

- Proceed to crash site.
- Take charge of security.
- Ensure proper care of survivors and/or remains.
- Ensure wreckage is not moved.
- Begin initial walk through. Make rough sketch or wreckage diagram.
- Identify hazards - mark them or make them safe.
- Time permitting, begin second phase of walk through taking notes.
- Assist, identifying locating and interviewing witnesses.
- Get weather observation from nearest weather facility.
- Provide MAB training as needed.
- Assess crash site security/logistic needs. Coordinate with appropriate unit personnel.
- Conduct investigation at crash site.
- Assist Engineering Member, as needed, with investigation at AR&SC or lab facility.
- Supervise photography, assist or do.
- Coordinate compilation of evidence and testing of theories.
- Ensure compliance with current directives for reporting.
- Prepare supplemental, progress, and final messages for President.
- Prepare mishap investigation report.
- Advise President on privileged nature of mishap data, statements, evidence, etc.

Engineering Member.

- Proceed to unit.
- Impound all aircraft and Engineering-related records; begin screening.
- Assist President and FSO.
- Prepare engineering associated messages (MDRs, URs, etc.).

- Supervise wreckage recovery and shipment to AR&SC or laboratory.
- Critical parts might need to be accompanied through the analysis process.

Flight Surgeon/Medical Officer Member (FS/MO)

- If survivors, supervise care of survivors.
- Proceed to location of survivors, make examinations, take samples, get written statements involving survival equipment, egress, rescue, 72-hour history, etc.
- Document all injuries of crewmembers, passengers and others involved in the mishap.
- If no survivors: proceed to location of remains, take samples, prepare for autopsy.
- Once remains have been located and transported to a specific location, contact COMDT (G-WKH-1) to coordinate Armed Forces Institute of Pathology (AFIP) participation.
- Determine who has jurisdiction over the fatalities.
- Coordinate AFIP efforts and assist with the autopsy.
- Blood and urine tests are required for all Class A and B mishaps and Class C and D mishaps where human physiological factors are suspected. See figure B of enclosure 3 of the SEH.
- Blood and urine samples should be taken as soon as possible after the mishap.
- Label specimens with name, SSN, date and time.
- Ensure body fluid and tissue samples are taken and shipped properly.
- Participate in investigation of life support systems and survival gear.
- Obtain medical/dental records of mishap crew.
- Complete Medical Officer Report (MOR), including mishap crew 72-hour histories. See enclosure 3 of the SEH Manual.

Standardization/Operations Member.

- Proceed to crash site.
- Assist FSO with security.
- Assist FSO and President in identifying and interviewing witnesses.
- Investigate crew qualifications, currency, proficiency and training.
- Obtain and screen training records.
- Assist with the administrative details for MAB.

Survivors.

- Where are they?
- What is their condition?
- Have they had medical exams?
- Have toxicological test/samples been taken?
- Who's talked to them?
- Have they signed a Witness Statement Promise of Confidentiality Advisory Form. See Checklist #27 and Enclosure 2 of the SEH Manual
- When will they be released by medical?
- When will they be available for CISD? CISD debriefing shall not take place until after the MAB has conducted their interviews.

Survivors must have a medical exam and have toxicological samples taken. Survivors should be interviewed and asked to write a statement.

Wreckage.

- Where is it?

- Who owns the property?
- What is the general layout?
- Who is guarding it? How long will they stay?
- What is the local authority structure?
- Was there any civilian property damage?
- Will the wreckage have to be moved immediately?
- Who wants the wreckage moved/held in place?
- Was there any classified material on the aircraft?
- Are munitions (including initiators/squibs) involved?
- Are there any composite materials involved?
- Is special handling (parts protection) required?
- What is the best way to get there?

Deceased/Fatalities.

- Have remains/personal property been located?
- Has a FS/MO examined the scene?
- Have the remains been recovered?
- Positive identification?
- Has AFIP been requested? Contact COMDT (WKH-1).
- Have toxicological samples been taken?
- Are autopsies planned?
- Jurisdiction (military coroner/medical examiner)?
- Civilian casualties?

The position of fatally injured crewmen should be examined by a FS/MO and documented before movement. The condition of flight gear and survival equipment must be documented before the remains are removed.

The autopsy should be delayed in order to allow the Armed Forces Institute of Pathology (AFIP) pathologist to arrive. Participation by the AFIP is mandatory unless COMDT (G-WKH-1) determines otherwise.

Remains, Autopsy, Toxicology.

These are matters for the FS/MO, but are discussed here because they bear on MAB proceedings and may require the MAB President's attention when military and civilian jurisdictions cross or generate confusion.

Custody of decedent's remains often rests with local law enforcement or affiliated medical authority, especially *when the mishap occurs off base. Custody and procedure vary from state to state. Although procedures in the vicinity of home base should be known to the flight surgeon, mishaps away from the home unit may cause confusion.

The FS/MO plays a critical role in jurisdictional issues. The US Coast Guard has jurisdiction of the bodies when the mishap occurs on property under exclusive federal jurisdiction. However, most bases have concurrent jurisdiction. The FS/MO should establish a working relationship with the local authorities, explore the options, and preferably reach a formal premishap agreement as to jurisdictional issues.

Authorization to perform autopsies may involve one or more of three parties: the next of kin (NOK), local civil authorities, or the Commanding Officer. If death occurs onboard a Coast

Guard unit, and the state has not retained concurrent legal jurisdiction at the unit, then the Commanding Officer may authorize an autopsy. NOK permission is not required in this case. However, every effort should be made to obtain concurrence from NOK. If death occurs within civil authority jurisdiction, the Commanding Officer is not entitled to direct an autopsy. In this case, authorization is the responsibility of civil authorities and may or may not require NOK permission, depending upon local law. Commanding Officers must be familiar with the reasons requiring an autopsy, and, if autopsy authority responsibility rests with local authorities, should advise those authorities of the need for an autopsy.

It is imperative that an autopsy be performed on each of the fatally injured crewmembers of a military aircraft mishap. Should the local medical examiner or coroner elect not to perform an autopsy, inform the AFIP at once so that they can assist in negotiations with the local authorities. If the local pathologist performs the autopsy, the FS/MO should be present. In this circumstance the FS/MO functions as the eyes and ears of the aviation pathologist, garnering the pertinent information, which will allow the later reconstruction and interpretation of injury patterns.

Federal Law (10 U.S. Code 75) gives the Armed Forces Medical Examiner (AFME) the authority to authorize postmortem examinations subject to the following considerations:

- If the jurisdiction is concurrent or exclusively civilian, then the local coroner or medical examiner will have jurisdiction. He may:
  - Retain jurisdiction and perform the autopsy.
  - Retain jurisdiction and request a representative of the Armed Forces Medical Examiner perform the autopsy under his jurisdiction.
  - Release jurisdiction to the Coast Guard, thereby making jurisdiction essentially federal, in which case the AFME will authorize the autopsy.
  - Retain jurisdiction but not perform an autopsy. In this case, the AFME can authorize an autopsy after the body is released. While the authority of the AFME is subject to the exercise of primary jurisdiction by the state or local government, it is not limited in those cases where the investigation is incomplete (i.e. no autopsy was performed by the local coroner or medical examiner).
- For exclusively federal jurisdiction, the AFME has the authority to order the autopsy.

In some jurisdictions, law may require autopsy for a death other than by natural cause; in others, an apparently accidental death may require only a police or coroner's determination that the occurrence was accidental. Some jurisdictions employ a medical examiner (physician, pathologist); some have a lay coroner.

If the case falls outside federal jurisdiction, the MAB's FS/MO should make contact with the local medical examiner or coroner to offer military handling of the remains and use of a military facility. The local authority may decline the offer, or may waive his jurisdiction in favor of federal authority. If local authority retains jurisdiction, have the FS/MO request attendance at autopsy and distribution on the report. If there are multiple fatalities, or condition of remains indicates a possible difficult case, request attendance of a pathologist or pathology team from AFIP.

For proceedings under civilian jurisdiction, have the FS/MO determine the extent that the medical examiner will obtain samples, conduct toxicological tests, obtain x-rays, conduct dental or other examinations. If the procedure under state law is less extensive than desired for the purposes of the MAR, FS/MO's Report, or JAG Manual investigator's report, have the FS/MO

request sufficient specimens be obtained or procedures performed to permit supplementary examination by AFIP. This is not a deficiency in civilian proceedings, their focus is law enforcement (criminal investigation). A crime has not been committed, or you would not be here.

Witnesses.

See Enclosure 10 of the SEH Manual and Checklist #7

- Were there witnesses?
- Who are they (names, addresses, and telephone numbers)?
- Will they be available?
- Who has talked with them?
- Do you need a translator?
- Are "Witness Statement Promise of Confidentiality Advisory Form" needed and signed? See Enclosure 2 of the SEH Manual and checklist #27.

Locate and interview witnesses ASAP. This should be a primary job for one member of the MAB for the first couple of days.

Promises of Confidentiality will be granted individually (on a witness by witness basis) and are not given automatically or on a blanket basis to all witnesses interviewed. Promises of confidentiality should not be implied from the investigator's status or function. See Enclosure 10 of the SEH Manual and checklist #13.

A "Witness Statement Promise of Confidentiality Advisory Form" (See Enclosure (2) of the SEH Manual and Checklist # 27) shall be attached to each witness statement.

A list of all witnesses interviewed shall be included in the MAR annotating whether the individual was offered and/or accepted the promise of confidentiality.

Initial Reports.

See Checklist # 5 and Chapter 3 of the SEH Manual.

- Telephone call to COMDT (G-WKS-1) or Flagplot?
- Preliminary (12-hour) message?
- Progress/Supplemental (72-hour) message?
- MAB Arrival Message?
- Review base mishap response plan.
- Review actions completed.

Initial Notification/Immediate Telephone Report. Mishap Reports are designed to tell COMDT (G-WKS-1) and other interested parties a mishap has occurred. Since they start the wheels of the mishap investigation machine moving, they must contain some specific information. The initial report shall include as much information as is available and should include location, time, and injury to personnel and or damage to Coast Guard property. See Chapter 3 of the SEH Manual for guidance.

Preliminary Message Report. Within 12 hours of a Class A or Class B Mishap a priority message report shall be sent to COMDT (G-WKS-1) by the unit experiencing the mishap. The twelve-hour delay is designed to allow for immediate rescue/recovery actions and for the collection of information. Follow the format specified in Enclosure (14) of the SEH Manual

- The preliminary message shall amplify and expand on the data provided during the

immediate telephone report regarding location, time, and injury to personnel and/or damage to property.

- The preliminary message shall contain factual information only. It shall not contain information based on witness statements or other testimonies. If some of the required information is unavailable or incomplete, include it in the progress or supplemental message.
- Do not list the names or SSN of members involved in the mishap. If necessary, injury reporting can be made by crew position.
- The Unit's Permanent MAB President has releasing authority for the messages.

NOTE: PRELIMINARY, SUPPLEMENTAL/PROGRESS AND FINAL MAB MESSAGES ARE A PART OF THE MISHAP ANALYSIS REPORT (MAR) BUT ARE **NOT** PRIVILEGED DOCUMENTS. THEY **SHALL NOT** CONTAIN, OR BE BASED ON, ORAL OR WRITTEN STATEMENTS OBTAINED UNDER ASSURANCES OF PRIVILEGE OR CONFIDENTIALITY. DO NOT INCLUDE INFORMATION PERTAINING TO CAUSES OR ANY INDICATION OF RESPONSIBILITY.

Records.

Individual assignments for securing records should be made during the unit permanent MAB training or in the preliminary meeting of an assigned MAB. Operational records will show whether the mission was properly planned, briefed and flown. Personnel records will show whether the crew was adequately trained, current and individually capable of performing the mission. Engineering records will show whether the aircraft was capable of performing the mission. Medical records and inquiry will show whether the individual was sociologically, psychologically and physiologically capable of performing the mission. The following information should be obtained:

- Aircraft (Engineering, weight and balance, etc.).
- Aircrew (training, flight, life support, etc.).
- Mission (flight plan, orders, manifest, etc.).
- Weather (forecast).
- FAA/AFCS tapes (controller/tower, radar, Command Post, etc.).
- Servicing (fuel, oil, oxygen, etc.).
- Medical (physicals, waivers, medication, etc.).
- Non-Aviation Personnel.
- Voice Tapes (aircrew recorders, CVR, FDR). See Enclosure 10 of SEH Manual and Checklist # 28.
- Photographs, videos, movies.
- Flight data recorder (FDR). See Enclosure 10 of SEH Manual and Checklist # 28.
- Cockpit Recorder. See Enclosure 10 of SEH Manual and Checklist # 28.

Site Security/Scene Jurisdiction.

- On Federal property - our wreckage and property.
- On state property - our wreckage, but not our property.
- On private property - our wreckage, but not our property.
- Local authorities.
  - Police.
  - Private guards.

On base, crash/fire/rescue and medical squads respond to evacuate survivors and suppress fire,

security responds to cordon the aircraft and restrict bystanders' access.

Off base, the civilian equivalents will arrive first (proximity) and probably have jurisdiction. Military units will roll to assist and possibly relieve. A municipal fire department will do its best with available equipment, but may or may not to be familiar with military aircraft.

- The local police or sheriff will normally provide the initial security off base. They will expect you to provide your own security ASAP and not later than 12 to 24 hours. If the crash site is located away from home unit, the nearest military facility may assist you with security. Work with that base's safety officer and COMDT (G-WKS-1).
- The mishap unit should contact local police or the security force from the nearest military installation to request they stand guard pending the MAB's arrival. Ask that they not disturb wreckage or ground scars, but locate and flag far-flung debris and photograph.

The unit FSO should have a pre-planned brief for security personnel addressing:

- Identification of personnel with authorized access to the site.
- Limits of their authority.
- Responses to press inquiries and souvenir collectors.

A local unit liaison can alleviate unfamiliarity with other government or civilian organizations whose assistance may be needed (hopefully a part of pre-mishap plan). Anticipate requirements for work details, lift, transport or storage, and request the liaison start finding sources to diminish response times when you later need them.

Anticipate a crowd. A disaster site is a magnet for the curious. Anyone on site who is not part of a solution is a hindrance, at risk to their safety and yours. Tactfully, but firmly, dissuade visitors regardless of rank.

The same applies to locations for wreckage storage and proceedings: hangar, warehouse, laboratory, and MAB room.

It is desirable to have an isolated area (possible or preferably off base) to examine and lay out aircraft/wreckage. This prevents the mishap aircraft from becoming a source of frustration or regret for the unit personnel.

Most people are deferential to uniformed personnel and respectful of roadblocks, gate guards and a marked perimeter. Offenders are likely to be underemployed military personnel and the press. Some people will require reminding. Site guards will take your lead. When you take charge of a site, brief security personnel on who (by name, affiliation or capacity) may be admitted. A list alleviates confusion for subsequent reliefs. Be prepared to back up the list, there will be requests for exception.

Requests will come from press, government and military personnel who drop by. The site is yours to conduct an investigation; you are not obligated to run tours. Refer press to the unit PAO. Ask government officials and military personnel their jurisdiction/capacity and "What can you do for me?" The Commanding Officer of the mishap unit is worthy; all others are suspect. If the visit has merit, provide escort, keep it short and do not disclose privileged information.

Personnel conducting a concurrent investigation may legitimately have access to the site to view the wreckage. They should not disturb evidence without prior consultation and your consent.

Military personnel may not exercise police authority off base. Be prepared to engage (mooch...hire, if necessary) police or sheriffs for security outside a federal reservation.

If the aircraft is located on private property, cultivate the owner's cooperation.

A landowner can alleviate some security and crowd-control burden by making trespassers unwelcome. He can authorize cutting a fence or blazing a trail through his crops or he can tell you to hike around a quarter mile section for a less advantageous access. It pays to be nice to the landowner. The same applies when working with state/national forest agencies, Bureau of Land Management, and so forth.

Off-base, be mindful of the recovery's nuisance to land owners and their neighbors. Bring in a portable toilet. Don't litter, trample crops or bother livestock.

If someone asks about restitution for damages, refer the requestor to the Executive Officer (by name & telephone number) or the military representative handling such claims. Diplomacy works. A "not-my-job" response alienates.

Logistics.

- What transportation do we have/need?
- Communications with mishap site?
- Nearest phone/work area/fax machine at mishap site?
- On-base work area for MAB?
- Local base support?
- Have crash site security, shelter, sleeping, clothing and food problems been arranged?

Do not count on transportation....unless you have the keys in your pocket. The more inaccessible the site, the more likely you'll get stranded. Take food, water and clothing sufficient to RON and to endure unexpected precipitation.

Have communication from the site to base or some other command post (sheriff, police, fire, and ambulance).

You might in some cases establish a command post off-site. If the mishap site is remote from a base, the MAB will probably be in commercial lodging; adjacent rooms make musters and passing the word easier. Obtain a meeting room in the hotel or reserve a room with a suite for daily meetings. See Chapter 2 of SEH Manual.

Classified Information.

MAB reports are not classified unless they contain information requiring classification in the interests of national defense or security. Reports containing such information shall be prepared with the classified material separate from the report, so the remainder of the report may remain unclassified.

Service members must try to protect classified information against compromise as required by the Classified Information Management Manual (COMDTINST M5510.2(series)). However, there are limits to Coast Guard authority at a mishap site, particularly off base. The enforcement of Federal, State, and Foreign criminal law is a civil police function.

Miscellaneous Reports.

A mishap involves the entire unit. This is most easily seen in the mass of reports that must be generated when a mishap has occurred. Sometimes the Flight Safety Officer or the MAB President is looked upon as the source of "what to do next." Involved parties should refer to the current edition of Directives, Publications and Reports Index (COMDTNOTE 5600) and current editions of specific directives to ensure they are meeting all requirements.

Knowledge of the various reports in existence is helpful, BUT, MAB members need not get involved in the preparation.

- The Administrative Investigations Manual, COMDTINST M5830.1 (series) contains a comprehensive summary of USCG investigations and reports.
- Legal Investigations. Instructions, requirements, and procedures for legal investigations are contained in the Coast Guard Administrative Investigations Manual, COMDTINST M5830.1 (series) and the Claims and Litigation's Manual, COMDTINST M5890.9 (series).
- Procedures for claims against or in favor of the Government are contained in COMDTINST M5890.9 (series).
- Procedures for property loss claims by Coast Guard personnel are contained in COMDTINST M5890.9 (series). Also, see the Property Management Manual COMDTINST M4500.5 (series) for loss of government property.
- Investigations Involving the National Transportation Safety Board and/or Federal Aviation Administration are covered in the Participation in a Military Aircraft Accident Safety Investigation Instruction, OPNAVINST 3750.16 (series).
- Fatalities and Critical Injuries Notifications.
    - Procedures for notification of next of kin are contained in the Personnel Manual , COMDTINST M1000.6 series).
    - Procedures for notification of the Commandant are contained in COMDTINST M1000.6 (series).
    - Procedures for release of names to the public are contained in the COMDTINST M1000.6 (series) and the Public Affairs Manual, COMDTINST M5728.2 series).
    - Funerals, survivor benefits, and other information are contained in COMDTINST M1000.6 (series).

NOTE: In the case of casualty reports and NOK notification, 24-hour time limits are usual. These reports are NOT the responsibility of the MAB President.

News Media.

- Remember the unit Public Affairs Officer (PAO) is the point man for the media—NOT MAB members or the FSO.
- Remember: Nothing is "off the record."
- Who is the responsible PAO?
- Has the local PAO been briefed to clear releases through you?
- What news releases have been made?
- What news representatives are present?

The MAB President is NOT a press spokesman.

PAO (usually at the unit or district) will represent the Coast Guard to the press. They can get by with a "small bag" of non-privileged, unvarnished facts: Who (unit, NOT individuals), What, Where, When. However, in order for the PAO to do a proper job, the MAB president needs to work with the PAO.

The Commanding Officer authorizes the PAO to provide all available, releasable information to the news media.

It is very important that accurate information is released to the public after a mishap. As soon as information is available. Such action demonstrates concern for the public and its right to unclassified facts. But even more important, the speedy release of information will prevent or dispel rumors that could cause panic or promote misinformation in media reports.

When possible, a simple photograph or two of the crash site can be used to "de-fuse" the media

frenzy for pictures. The MAB can release these; consult with COMDT (G-WKS-1).

When informed an aircraft mishap has occurred, the Commanding Officer of the Coast Guard unit nearest the mishap site shall immediately notify the District Public Affairs Officer (PAO).

COMDT (G-WKS-1) will attempt to serve as a central source for mishap information for Coast Guard requestors. As such, the MAB or mishap unit shall provide, non-privilege digital pictures of the mishap scene to COMDT (G-WKS-1).

The PAO might approach you for information when he cannot find it elsewhere in quick order. If you have reliable information, provide the following: aircraft model, mission, number of crew/passengers, damage and casualties. Any reliable information that will alleviate concerns is helpful. Make no attempt to explain why or how; these are still unknown, difficult to determine, and under investigation. A PAO should not ask these, nor should you offer.

The Initial News Release should include:

- A general description of the type of mishap (crash, mid-air collision, and so forth).
- The time and location.
- The aircraft's departure point.
- Destination (unless information is classified or foreign country sensitivity precludes release).
- The number of crewmembers and passengers.
- The type of aircraft.
- Unclassified facts about the mission when the mishap occurred.
- The fact a MAB will investigate the mishap.
- Avoid nondescript phrases, such as "on a routine training flight." Instead, describe the purpose of the flight (such as, "on an instrument training flight") and give as many facts about the route, altitude and mission as security permits.

Likely news questions.

- When will names of crewmembers be released?
- When can we interview the surviving crewmembers?
- What caused the accident?
- How long will investigation take?
- Where can I get a copy of the report?

Explaining privilege (through PAO to the press and the public) is too hard and too easily misconstrued. Don't!

The PAO should emphasize (1) an investigation is underway, and (2) it is a detailed process which may take weeks or months to complete.

If a reporter succeeds in approaching an MAB member directly, the member should refer the reporter to the PAO prepared to handle the press.

Release of Names. The responsible public affairs office releases the names of people involved in Coast Guard mishaps.

Media Access.

- At an off base mishap, security police or other law enforcement officials often rope off or stake out an area to protect the public from injury, to protect government property from further disturbance, or to protect classified information against compromise.
- If requested by the news media, the on-scene commander or responsible official could admit news media representatives into the cordoned area with an escort.

- Lack of escort personnel should not be absolute grounds for denying media access. However, if classified defense information is exposed, the on-scene commander should explain the situation and ask the news media to stay back until it can be covered or removed.
- Photographs of bodies or remains should be discouraged.
- If possible, the media will be briefed on safety hazards in the area, and the need for preserving the mishap site for investigation.
- If they refuse to cooperate, no military member may physically restrict the movement of the media at an off-base site.

Authority Over News Media. The authority of public affairs personnel, on-scene commanders, MAB members, and security police is limited when dealing with news media, particularly at an off-base mishap site.

- Off Base Mishap with Civil Authorities Present. If no classified material is exposed, or if it has been covered or removed, the senior military representative can authorize news media photography. If it can't be determined whether classified information is exposed, explain that fact to any news media photographers at the scene and tell them photography cannot be authorized. Warn them that taking pictures without permission may violate Federal law, but don't stop them if they persist. If the classified information is exposed and it cannot be covered or removed, the senior military representative must:
    - Explain the situation and ask the news people to cooperate.
    - Explain that Federal law prohibits photography when official permission is expressly withheld (18 U.S.C. 795 and 797).
    - Avoid using force if news people refuse to agree. If someone takes photographs after being warned, Coast Guard officials must ask civil law officers to stop further photography of the exposed classified information, and to collect or get back all photographs (including exposed or unprocessed film).
- Off Base Mishap Without Civil Authorities Present. If no civil law officers are on the scene and unauthorized pictures are taken, do not try to seize the film or detain the photographer. Instead, the senior Coast Guard official at the scene or the responsible on-scene commander must:
    - Immediately contact the managing editor or news director of the newspaper, magazine, or television station employing the photographer.
    - Explain the situation.
    - Request the return of film having suspected classified information.
    - Explain that failure to return the material to military authorities violates Federal law (18 U.S.C. 793(e), 795, 797).
- On-Base Mishap. The Commanding Officer has much greater control of the news media with an on-base mishap. If classified material is not exposed the Commanding Officer will usually allow the media access to the site area. If classified material is exposed, the Commanding Officer can bar the news media from the site. Any exposed film can be confiscated, developed, and examined. The photographer should be given a receipt for any confiscated film. There is no reason to detain the photographer. All portions of the film not containing classified material should be returned to the photographer.

Special news media identification may smooth Coast Guard and news media relations at a mishap site. The PAO may prepare and hand out badges, armbands, or other devices for identification. Wearing of such identification by news media is voluntary.

CHECKLIST # 3--MAB Duties.

Each member is responsible for seeing that the documents or data are collected or developed. They may require help or assistance from other MAB members or unit personnel.

Flight Safety Officer Responsibilities.

- Weather.
- Impact point.
- Explosive and fire patterns.
- Design deficiencies.
- Violations.
- Supervision.
- Airfield facilities and lighting.
- Communications and navigational aids.
- Mishap Messages.
- Transcripts of Recorded Communications.
- Any Additional Substantiating Data Reports.
- Statement of Damage to Private Property.
- Diagrams.
- Photographs.
- Investigation, Analysis, Findings, Recommendations.
- Tracking and control of documents and evidence.
- Statements and Interviews.

Standardization Pilot/Aircrew Member Responsibilities.

- Pilot or crew qualification, currency, proficiency.
- Crew rest.
- Mission.
- Mission planning.
- Required publications.
- Clearance package.
- Crew briefings.
- Preflight.
- Flight.
- Supervision.
- Collect all existing records and documentation necessary to support the investigation and give to the recorder for safekeeping.
- Flight and Personnel Records.
- Flight Plan.

Engineering Member Responsibilities.

- Engineering records.
- Technical orders not complied with.
- Engineering personnel.
- Aircraft Engineering and Materiel Report.
- Product Quality Deficiency Reports (PQDRs)
- Technical and Engineering Evaluations of Materiel.
- Weight and Balance.

- Technical and Engineering Evaluations of Material.
- Reconstruction (if necessary).
- Flight controls and structures.
- Power plant, fuel, and oil systems.
- Electrical, electronics, and instruments.
- Hydraulic, pneumatics, and air-conditioning.
- Publications and directives.
- Manning.
- Supervision.
- Collect all existing records and documentation necessary to support this portion of the investigation and give to the recorder for safekeeping.

Flight Surgeon/Medical Member.

- Medical factors.
  - Physiological.
  - Psychological.
  - Psychosocial.
- Human Factors.
  - Biomechanical/Ergonomic.
  - Environmental
- Medical Officers Report.

Recorder Responsibilities (Non-Voting).

- Ensure adequate communications are established.
- Make necessary contacts with unit personal for support and assistance.
- Keep a list of important telephone numbers. See Checklist #25.
- Ensure sufficient supplies are provided.
- Set up a file cabinet and filing system similar to tab structure of formal report. See Enclosure 2 of SEH Manual.
- Maintain a log of documents and evidence.
- Log in and out all documents and evidence taken from the MAB room.
- Coordinate clerical/secretarial and reproduction support.
- Coordinate transportation requirements for MAB.
- Reproduce material needed for formal report as soon as possible so originals will be available for other investigation board or make additional copies for other investigation boards if requirements are known.
- Oversees the typing, assembly and reproduction of formal report.
- Act as control point for all incoming telephone calls and message traffic.
- Supervise outgoing message traffic.

CHECKLIST # 4--The MAB In Action.

The President is the focal point for communication concerning the investigation's progress and the only conduit for external release of information, unless he approves otherwise.

Not every inquiry merits an immediate or personal reply. It is sufficient to inform COMDT (G-WKS-1) of your investigation's progress and needs for assistance. The rest can read the mishap messages.

The inevitable phone calls for "gouge" from the field should be directed to COMDT (G-WKS-1).

The MAB may discover a hazard, posing an imminent threat to flight safety, requiring notification to the aviation (military and non military) community well before the mishap investigation or report is done. The MAB president shall immediately notify COMDT (G-WKS-1) by telephone. A supplemental message shall be sent, regardless of whether such information is associated with the mishap under investigation. COMDT (G-WKS-1) will notify the appropriate Coast Guard Headquarters offices and other agencies and ensure proper action is taken.

There may be a concurrent Administrative investigation dealing with the event from the same body of evidence, same witnesses and technical resources. It will be necessary to communicate with those in charge of the other Boards to arrange their access to factual information.

The safety investigation will have precedence over all other investigations. However, the MAB must make provision not to spoil evidence and to afford the others access to crash site, wreckage, evidence (logs, records, ATC tapes), and a list of witnesses. This does not extend to MAB work product such as privileged statements, tapes or notes of interviews, drawings, etc.

Work Space.

- Should be set up by the mishap unit before the MAB arrives (conference room, training room, etc).
- Administrative secure area (for desks, filing cabinets, etc.).
- Secured storage area (for wreckage, recovered gear, etc.).
- Telephones, faxs, copiers, computers, coffee.
- Isolated if possible.

Transfer the safety reporting load from the unit to the MAB as soon as possible.

Until you establish an MAB room, use the safety office to receive incoming calls, passing on only those the MAB must handle.

Arrange for an office or meeting room to can be used exclusively by the MAB until completion of the investigation. Meet in a location that is mutually convenient, and affords privacy.

COMDT (G-WKS-1) will work with the mishap unit or facility nearest the mishap to provide the MAB a secure room to work and conduct business. The room should be for the exclusive use of the MAB; secure file storage (or keys to the room), telephone, worktable, chalkboard (or equivalent), easels and pads, access to a copier and a computer. A clerk typist or yeoman is generally a must.

For a mishap remote from a Coast Guard unit, COMDT (G-WKS-1) may authorize renting a meeting room or occupying a hotel suite. Equipment can be rented.

A chalkboard or other device where facts/evidence can be listed and photographs displayed is a

big help. Butcher paper on the walls of the MAB room is also useful.

It is helpful to keep all your working papers in a three drawer file cabinet. One drawer is for original material. This material is never removed from the office. It is copied and the copies are kept in the second drawer. These are working copies and are available to all members of the MAB. The third drawer is for the use of the MAB members. Each member keeps his papers in a separate folder, available for work. This method assures the security of the original material and organizes each member's papers.

Assigning Responsibilities.

- Use MAB organization/duties for MAB responsibilities. See Checklist #2 and #3.
- Use report index.
- Outline report.
- Designate writers.

Managing.

- Set standards early.
- Breaks.
- Time off (remember and enforce the 8 day bag rule).
- Work hours. (avoid long day burn out).
- Need for discretion.
- Objectivity.
- Scope of responsibility.
- Efficient use of resources.

Key Points.

- Fit the MAB to the mishap; keep it small.
- Keep the lines of authority clear.
- Be flexible.
- Keep quiet. Remember you are dealing with limited-use, privileged information.
- Keep in mind the briefings that must be generated to various levels of command.
- Keep track of ALL documents and evidence.

Daily Activities.

- Meet.
- Update progress.
- Cross-tell information.
- Review schedule, workload, etc.
- Plan future activities.

Convene frequently but briefly in the beginning; 30 to 60 minutes per session is sufficient. Until the investigation is well advanced, most of the information you seek will be outside the MAB room; what little is known will be insufficient to support deliberation.

Plan to have a MAB meeting every day to share information and to direct efforts.

Do not rush into things; take time to consider the down stream consequences of actions particularly pertaining to material evidence.

Try to convince MAB members to keep an open mind during the first few days of the investigation. Impress upon them the importance of just collecting factual information and not developing theories until you are ready for that phase.

It is going to take close supervision on the part of MAB members to ensure mishap damaged components are not lost or mishandled during movement and shipment.

Keep after the MAB until the "root" causes are found. "Root" causes are those effecting permanent results when corrected. Most root causes will be "people" oriented, such as lack of training, inadequate supervision or poor design.

Don't be afraid to dig into other areas of command business to find causes. For example, the unit may have training problems and supervisory error may occur in any chain of command. For each finding ask: "Who?" "Did what?" And "Why"

Don't be put off by the statements "it's always been done this way" or "the procedures are ...." In many cases the people making those statements do not know what is really going on, check personally.

Technical Experts/Observers: Use them to the fullest extent possible, but be careful not to let them become to deeply involve in other aspects of the investigation. Remember their background and interest.

Pool information, have each member present information he/she has found since the last meeting and estimate time to conclude unfinished tasks.

Note progress made and difficulties needing your intervention. Close off finished business and make record of findings to avoid later having to duplicate the effort.

Determine topics needing further development or additional personnel. Reassign tasks as necessary and adjourn to permit MAB members to go about their respective assignments.

Even with a full MAB, you might feel manpower-limited. Cover more territory simultaneously by tasking members according to their topical expertise and availability. Delegate and work in parallel.

Support.

See Checklist #6

Get the support you want. If a task requires professional or specialty equipment, the MAB need not make do with amateurs and inadequate tools. Assess the risk of injury to personnel or damage to evidence before settling for less.

Make the system work for you. The chain of command and aviation community want you to find mishap cause and are willing to help. They cannot read minds. Make your needs known to people who can deliver assistance.

Most materials and services are available with a well-placed telephone call (work details, transportation, box lunches); some may require a message or letter (full-blown salvage).

If you know what you want but do not know a source, others might. COMDT (G-WKS-1) has probably encountered a similar problem and knows who can help or can contact sources for solutions.

Ask early, before evidence is disturbed, perhaps beyond reconstruction. It may take time to muster travelers to the site. Technical consultants will want to see evidence as-found, if possible.

Bridle your curiosity to open or test components unless you have competent personnel on hand.

Reasonable expenditures are justified to discover mishap cause and prevent future loss.

Don’t take no for an answer unless you are convinced no is the answer. Persist long enough to determine whether denial is based on incapacity, lack of authority, or unfamiliarity with what you want. The answer may change if you direct your question to someone with greater authority, knowledge or initiative. The answer may change if you rephrase the request to make method or incremental steps evident.

Technical Assistance.

See Checklist #6.

Needs vary with mishap circumstances. Every mishap raises questions or issues for which a MAB’s aggregate knowledge is not enough.

If you (collectively) do not know how to do something or how to interpret what you found --- STOP! Get knowledgeable help.

Regardless of civilian or government employment, a technician or engineer assisting the MAB is not a member of the MAB and may not have access to privileged information. His work product will not be protected by privilege. An Engineering Investigation (EI) report is an authoritative source of factual information; accessible to safety, administrative or legal proceedings, and to public inquiry. Consequently, an EI report must not contain information violating privilege; the best assurance this will not happen is to avoid sharing privilege information in the first place.

Do not leave such guests to putter among wreckage or exhibits while the MAB is elsewhere.

Use technical assistants appropriately, but observe the limits of their expertise or qualifications. It is inappropriate and of little use to question the airframe maker’s representative on the inner workings of an engine.

Many people who respond to a mishap investigation come from a command or corporation that designed, built, supplied, maintained, overhauled, scheduled or operated the aircraft. Consequently, they could have a vested interest in the evidence and the investigation's outcome.

Avoid the appearance of impropriety in evidence access, handling or custody. No contractor or corporate representative should have unescorted access to the mishap exhibits. For example, a manufacturer representative on a crash site or admitted to a wreckage layout should travel in company of a MAB member or a unit member competent on the system of interest.

Technical assistants are not permitted access to privileged information. This does not mean you must stay in separate hotel, travel separately or sit apart at dinner. It simply means: Be discrete! The content of the MAB's privileged interviews may not be shared, wholesale or piecemeal; the MAB's speculations on cause should not be aired beyond its membership.

Water and Oats.

Take care of your horse: you will ride the same tomorrow.

Just like horses, people need water and food. They require adequate protective clothing, transportation, lodging and rest. Stinginess is demoralizing, and counterproductive.

People want information and need guidance: tell them what to look for, what to avoid, how to conduct themselves.

Invite their input. You do not have a corner on solving the mystery. You will not see everything; you may not recognize what you do see. Anyone who works on an aircraft has some area of expertise. Expand the MAB’s grasp by inviting the working party to look for distinctive signatures or unusual damage on the wreckage while working at the site or layout.

Quit while you're ahead. Do not work a crash site without light. Doing so increases risk of personnel injury and evidence loss. Post security and retire from the site before sunset to allow all to find their way back to familiar surroundings before dark. If daytime high temperature compels working in the area from sunset to dawn, thoroughly evaluate the site and wreckage by daylight to determine what can be done by artificial light. Stage generators well clear to reduce impediment to people and machinery moving about the wreckage, and to reduce nuisance noise and fire hazard. Obtain abundant mobile lighting before commencing operations by dark; move it as needed to aid work.

Respect the 8-day bag rule and avoid long days as much as possible. Your team needs to be rested to do a good job.

CHECKLIST # 5--MAB MESSAGES.

Arrival Message.

The MAB President shall send an arrival message notifying headquarters that all MAB members have arrived and that the MAB has assumed the investigation. This information may be included as part of the Progress/Supplemental message and the optional MAB progress message format in Enclosure (5) of the SEH Manual may be used.

Progress/Supplemental Message.

A Progress/Supplemental message report shall be sent within 72 hours of a Class A or Class B mishap to COMDT (G-WKS-1) and appropriate headquarters offices See Chapter 3 of the SEH Manual for reporting requirements.

The MAB President shall send this message. The unit will send, if the MAB has not convened. Progress/Supplemental messages shall be sent thereafter at the MAB President's discretion or as directed by COMDT (G-WKS-1). Follow the format in Enclosure (5) or optional MAB progress message format in Enclosure (14) of the SEH Manual.

The MAB President shall send a supplemental message; if critical information is discovered; when the MAB adjourns and if it reconvenes.

When new information or corrected information is added to mishap message, the information is preceded and followed by X's. This alerts the reader to a change/addition. Changed information is substituted for the old information in the text of the message.

- Addressees. COMDT COGARD WASHINGTON DC//G-WKS/OCA/SEA// will always be the action addee. The originator will be the unit sending the message with an indicator noting the MAB President is the releaser (COGARD AIRSTA MISHAP//CG TAIL # MAB).
- Addresses should include AIG Eight Nine Zero Seven and any other appropriate AIG's.
- Specific Addressees may be added to the message. Before adding additional addees, ask "Do I need that activity's assistance or does that activity have an interest?" Confer with G-WKS, if there is questions about who should receive the messages

NOTE: If the MAB discovers information seriously impacting Coast Guard operations, the MAB President shall immediately notify COMDT (G-WKS-1) by telephone. A supplemental message shall be sent, regardless of whether such information is associated with the mishap under investigation. COMDT (G-WKS-1) will notify the appropriate Coast Guard Headquarters Offices and other agencies to ensure proper action is taken.

Aviation Mishap Message Tips and Reminders.

NOTE: PRELIMINARY, PROGRESS/SUPPLEMENTAL, AND FINAL MAB MESSAGES ARE PART OF THE MISHAP ANALYSIS REPORT (MAR) BUT ARE **NOT** PRIVILEGED DOCUMENTS. THEY **SHALL NOT** CONTAIN, OR BE BASED ON, ORAL OR WRITTEN STATEMENTS OBTAINED UNDER ASSURANCES OF PRIVILEGE OR CONFIDENTIALITY. DO NOT INCLUDE INFORMATION PERTAINING TO CAUSES OR ANY INDICATION OF RESPONSIBILITY.

Keep the text short and don't include any indications of possible cause (e.g. the pilot lost control of the aircraft and was unable to recover before the aircraft was lost. Better said the aircraft departed controlled flight and impacted the water).

Location of Mishap. If the location of the mishap cannot be readily identified with a recognizable place name, include the latitude and longitude, radial or DME from nearest navaid.

DO NOT include name or social security number of anyone involved in the mishap in an aviation mishap message. Use crew position to identify crewmembers.

The message should contain pertinent information about the progress of the investigation, not discoveries made by the investigation or results of the investigation. Correct comments would be the location of the MAB, the wreckage, or salvage progress.

Also, this is the time to ask for assistance from outside sources for salvage, investigative expertise, evidence (plat tape, FAA tapes, tower tapes, etc.), and extension of reporting deadlines.

In fatal mishaps, include requests for Armed Forces Institute of Pathology (AFIP), include location of remains. All such AFIP requests are made through COMDT (G-WKH).

Where information is unknown or if it would defeat the purpose of privilege, use UNKNOWN or XXXXXX as a placeholder for that information group. When the information is known or becomes releasable, it can be stated in a Progress/Supplement Message.

Use Progress/Supplement Reports as needed to keep the chain of command advised of new information or significant events.

Final MAB Message.

A final MAB message shall be sent when the MAB concludes the on site investigation, analysis and MAR. Because the MAB process is not complete at this point, COMDT (G-WKS-1) shall be the releasing authority for the message. The MAB President of the MAB shall confer with and receive COMDT (G-WKS) permission prior to release.

The final message report shall contain:

- A short factual synopsis of the event.
- Date the MAB adjourned.
- Description of damage.
- Disposition wreckage and/or status of salvage operations.
- Specific recommendations the MAB feels need the immediate attention of field commands.
- The message shall not contain opinions or speculation regarding the mishap.

CHECKLIST # 6--Second Day and Beyond.

The MAB will be drawn in different directions by simultaneous efforts to examine artifacts at the crash site and to pursue compelling aspects of the investigation elsewhere. Each can go on concurrently...and should.

Make and carry a grocery list, tasks, questions, observations come at a rush. Your attention will be saturated to the neglect of the big picture unless you keep track. Howgoesit must be continuous. Note progress. Assess what needs doing now and next, what can be done with assets at hand, how and by whom. Do not dwell on the difficult or impossible. This is a clue you need competent assistance.

Review Previous Day's Activity.

Consider what was done, what was initiated but is incomplete, and what was deferred. Aside from the wreckage, candidates for the MAB's continuing attention include further site assessment, photography, augmentation/assistance requests, interviews, documents and other evidence gathered but not yet digested.

Site-and-wreckage assessment. Access and stability are initial concerns. Determining the extent of wreckage scatter, and documenting it might occupy the second day. Reading site and wreckage for clues come next. Excavation, disassembly, pickup and removal from the site come later.

Photography. If a complete set of "as-found" photographs was not made on day one, do it at the next opportunity.

Assistance. Acknowledge the limits of the MAB's collective capability and reach out for the help you need. Request early. Make the system work.

Witnesses. Yesterday you found them and requested a statement or held a hasty interview. Today read their statements. Begin interviews in earnest, starting at the top of a prioritized list. See Checklist #7.

Documents and Records.

Review impounded documentary evidence and records. These were sequestered at your request and will be available for review. Determine if there is information of use and if further processing or analysis will be required.

Detail a member to review the cockpit voice recording and the flight data printouts to determine whether there is information of use and if further processing or analysis will be required. See Chapter 2of the SEH Manual Enclosure 10 and Checklist # 28. VADR downloads should be requested ASAP.

Some MAB's go days without sifting and appreciating pivotal information already in hand. The first day's impound will have yielded a substantial collection. Mine these resources. Go back to their sources promptly with questions they stimulate, while memories are fresh.

Evidence in hand has three potential consequences: it can verify what has been offered or presumed thus far; it can indicate a new course for investigation; or permit closing an area of the investigation. Some inquiries simply affirm situation normal. When you are satisfied you have that affirmation and there are negligible indications otherwise, make note and move on to the next area needing attention. Once reviewed, organize and securely store the evidence collected.

Assistance with Field Investigation.

- What specialists might I need?
- What can a specialist do for you?
- When to request assistance:
  - Conduct initial investigation to eliminate most "causal" possibilities.
  - Narrow the field of possible cause factors to minimize assistance required and maximize on their effectiveness.
- Assistance should be requested from COMDT (G-WKS-1) directly.

MAB's consist of individuals well trained in their respective fields but generally most have never participated in a mishap investigation. The FSO has been school trained. However, mishap investigation is one-third book knowledge and two-thirds experience.

The typical MAB is capable of successfully investigating the majority of the aircraft mishaps with only a small amount of technical and engineering assistance. Assistance is available from other military services, agencies and organizations on an as-need/as available basis. Request should be made through COMDT (G-WKS-1).

The key is knowing when you have reached the limits of your expertise and then knowing where to go for help.

The type of mishaps requiring the aid of a technical expert should be recognized by the FSO. They include:

- In-flight structural failure.
- In-flight fire from unknown source.
- Midair collisions.
- Those mishaps where nothing is known of the causes and there are no surviving crew members (smoking hole).
- Deepwater recovery attempts.

Technical Assistance Guidelines.

The MAB President sets the basic guidelines for the outside expert's participation in the mishap.

Ensure they understand:

- They are expected to share all information as it is developed.
- The FSO is in complete charge of the crash site.
- Only the portion of privileged information necessary for them to assist will be divulged.
- The MAB President is in control of the investigation and can send anyone home that does not play by the rules.
- The MAB, and only the MAB, is responsible for determining the cause of a mishap and making the recommendations to prevent similar mishaps from happening again.
- Technical experts may be knowledgeable in their field, but they may not be mishap investigators, nor will they have as complete a picture of the mishap as the MAB.

All you normally want from these experts is a factual listing of their findings, nothing more. Remember, this is considered non-privileged information and will be available under FOIA request or to the Fact Finding Body.

The MAB will analyze the facts and make conclusions.

The MAB may discount or disbelieve the experts' facts not supported by other information.

What is needed will depend on circumstances unique to the mishap. Most mishaps require people at the crash site to assist the MAB with reading the wreckage and, later, to accomplish a

recovery. Some mishaps justify bringing subject-matter experts to the site for detailed examination before evidence is disturbed or to guide removal for examination elsewhere.

Get the support you want. Commandant has appointed you to find the cause(s) and is willing to help. Make your needs known to people who can deliver assistance.

Technical Assistance. If you decide you need assistance, ask for it pronto. A telephone call is usually sufficient to bring subject-matter experts to your location. Requests for equipment, materials or personnel should be conveyed in a supplemental mishap message.

Work Details.

Working parties are a necessity. Tasks vary with mishap circumstances and condition of the aircraft, so qualifications can vary. Personnel can be drawn from the mishap unit, other units or contracted. When exploiting wreckage for evidence, Engineering personnel are a great aid in name-that-part and how-it-works discussions, which go with examination.

Be wary of over tasking. Reserve risky jobs for professionals capable of handling them--a logger fells trees; an equipment operator runs machinery, and so forth.

It is possible to muster too much help or help which cannot be used...yet. Some activities depend on preceding work: stack them for serial accomplishment. If an aircraft sits in a crater in a forest, little investigating can be done until the hole is excavated. That waits until trees are felled and a trail blazed for digging machinery to reach the site. A backhoe operator will refuse to dig while people are in the hole or loitering within the arc his bucket can swing. Mechanics to help examine wreckage need not be on site until the aircraft is above ground. Keep excess players in the dugout until they are next at bat.

Take care of the troops. People need guidance at unfamiliar employment; tell them what to look for, what to avoid, how to conduct themselves on the site.

Invite their input. Everyone who works on aircraft has some kind of expertise. Expand your grasp and view by asking the working party to look for and call to your attention distinctive signatures or unusual damage on the wreckage as they handle it.

People need food, water, protective clothing, toilet, transportation, lodging and rest. Have ample potable water to serve everyone through the day and into the night watches. In hot weather, replenishing electrolytes is essential. If the crew will eat on site, stage more water to permit washing before eating. Position food, water and utensils upwind, at a distance from wreckage or excavation. Call everyone off the wreck for a break and let them rest while they eat. If rain threatens, set up service and eating areas under a tent.

Safety at the Site.

- Biological Hazards See Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation, (http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm.).
- Environmental Hazards (will vary with the mishap location).
- Clothing.
  - Protect everyone against the environment.
  - Protect everyone from other on site hazards.
- Blood Borne Pathogens. See COMDTINST M6220.8 and The Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation.
- Composites. See appropriate aircraft manuals and Naval Flight Surgeon Pocket.

- Munitions.
  - Safe, document position and condition, and get them home.
  - Safe all explosive sources (initiators, carts, squibs, etc.).
  - Use Navy Explosive Ordnance Demolition Teams (EOD).
- Pressure vessels.
  - De-energize all tires, reservoirs, pneumatics, etc.
- Flammables and toxins.
  - Clean them up.
- Digging in the hole.
  - Be careful. Fumes and explosive components can be hazardous to your health.

Don't have a mishap while investigating one. There are hazards to unfamiliar work in unaccustomed surroundings. Consider the brew of heavy objects, jagged metal, mysterious residue, combustibles, explosives, rough terrain, and weather. Think about self-preservation, then extend that to the MAB members.

Everyone on site will be doing hard, dirty work and they will perform better if dressed comfortably, appropriately and adequately equipped for the job. A standard uniform might not be appropriate for the climate or for the work performed; augment or modify it. Obtain and issue foul weather gear, protective clothing and accessories as needed.

A spirit of volunteerism underlies public and internal response to a mishap. Can-do runs high on a crash site; enthusiasm will overrun caution if permitted to do so.

Do not take the unfit or infirm to the field. Digging, lifting and toting in the wild will tax the most fit. Have a corpsman at the site so long as potential exits for injury during work details. Have communication from site to base (base Crash Fire Rescue/sheriff/forest service...) and transportation to the nearest emergency medical facility.

Plots, Diagrams, Surveys.

A representation of the mishap site is not a required enclosure to the MAR; it may be an enclosure if you find it helpful. Regardless of whether one goes into the final report, it can be an aid to the MAB. A record will show how and where things were found (when you sit down to write); it can be an analytical tool to figure aspects of ground collision and breakup. The decision is yours. Method, formality and level of precision are not important, do what best suits your need and purpose.

If you forego the opportunity to diagram early, it will be difficult to recapture. This is a one-stop opportunity. Ground scars disappear under vehicle and foot traffic or precipitation; parts' original locations are lost when they are picked up.

For wide scatter (high speed/low angle impact, inflight breakup, midair collision) consider using GPS to plot wreckage. For more confined distribution (vertical entry, flat spin, slow speed), a simple grid or heading/distance-from-center may do. For a site of a few acres with extremities in the hundreds of feet, a long tape and a compass will suffice; record observations on graph paper or in a notebook.

Got maps? The largest scale (small area, high level of detail) map available is usually best. Scale 1:50,000 is marginal; 1:25,000 or lower is better. Infantry units have them. Federal and state agencies overseeing public land have limited stock. Sporting goods stores stock maps for hunters and hikers. Base civil engineers can print custom-scaled maps for facilities they manage

(helpful for mishaps on or near a runway). Stores with computer software will have maps-on-CD programs; these maps might be of national scope and short of detail when pushed to close views. Try before you buy or read the wrapper carefully, to ensure it will support the level of topographic detail you desire.

Site Security.

Previously discussed, but worth emphasis. People who were respectful to the emergency response the first day may be bolder today. Day Two crowds will be the unrelenting curious, including idle military personnel. Be prepared for flimsy pretexts advancing on your perimeter. Back up the security detail, or become a tour guide.

Supervise those admitted inside the perimeter. Manufacturers' representatives should travel with a MAB member or member from the unit and competent on the system of interest. Contract engineering personnel should work under supervision of a MAB member or unit personnel.

Uniforms make your presence separable from onlookers and diminish crowd control problems by distinguishing players from spectators.

Inquiring Minds Want to Know.

The MAB President is the communications focal point for the investigation. Assume the safety reporting load from the SDO/ODO at your earliest convenience.

Not all inquiries to the MAB merit a personal reply; some merit none. It is sufficient to inform the Commandant of the investigation's progress and of assistance required. A few others may need selected information to provide assistance you want of them. The rest can read of the investigation's progress in a progress message.

Some external pressure is real; much is imagined. The precedent you establish in external contacts will encourage or deflect return visits. If you are a 'soft touch,' expect to be touched often. Focus on these three facts:

- The MAB President answers to the Commandant.
- The MAB works at the direction of the MAB President.
- The investigation takes precedence over other duties.

Middlemen or staff do not wear the boss's rank. MAB members approached by interested outsiders should tactfully decline intrusion on MAB proceedings or request for disclosure. Should the requestor be persistent, refer them to the MAB President, CO or Headquarters.

It is necessary to communicate with the AIM investigator. The AIM Investigator may observe wreckage and its handling at the site or layout, as well as component disassembly. The AIM Investigator needs access to documentary evidence (logs, records, ATC tapes); this does not extend to MAB work product. Access should be arranged for mutual convenience. The MAB is obliged to disclose witnesses' names; however, their privileged statements or interviews may not be shared.

If the MAB discovers a hazard posing an imminent threat or information seriously impacting Coast Guard operations requiring immediate notice (before the investigation report comes out), the MAB President shall immediately notify COMDT (G-WKS-1) by telephone. A supplemental message shall be sent, regardless of whether such information is associated with the mishap under investigation. See Checklist #5. COMDT (G-WKS-1) will notify the appropriate Coast Guard Headquarters Offices and other agencies and ensure proper action is taken.

It is the PAO's job to represent the Coast Guard to the press. Leave press commentary to a pro. If approached, MAB members should refer inquiries to the PAO by name and telephone number. See checklist #2.

Hurry Up.

Most deadline dread is self-inflicted. A mishap investigation is an unfamiliar job, and you will not be master of all resources. Some projects' outcome and completion are hard to predict because they are ill-defined, layered or infrequently practiced. For example, a backhoe operator tries to please when he estimates time to excavate the crater where your wreckage rests. But craters are not a standard commodity; no one can know how deep one is until the bucket stops scooping parts. Don't recycle his cheery estimate to others by announcing the wreckage will be out of ground by 1200; don't commit dependent plans to execute at 1201. Keep estimates conservative and plans flexible.

Reconvene at the End of Each Day.

Quit before dark and convene at day's end. Close down the site and post security. Finish business with your working party and technical assistants. With working party supervisors and technical assistants, summarize activity and plan for tomorrow. When this is finished, excuse all who are not part of the MAB.

Have MAB members summarize their findings and work started or done, one by one.

Check progress and difficulties. Close off finished business and note findings to avoid later having to reconstruct the same. Assess which matters need further development and possibly additional personnel. Task as necessary.

Unless guided, meetings can digress to speculation on cause. The temptation goes with the territory. Until the investigation is well underway, discipline yourself and members to remain at the task of discovering evidence. The MAB may entertain possibilities at any point, but must make judgments only in light of sufficient evidence.

CHECKLIST # 7--Witnesses.

Types of witnesses.

- Pilots, crew and passengers. Participants--those directly involved in the mishap.
- Air traffic controllers, plane captains, Engineering personnel, etc.
- Witnesses who may have seen and/or heard events leading to, during, or subsequent to the mishap.
- Peers, friends and families of the mishap personnel.
- Observer--a matter of chance.
- Anyone who might shed light on any of the causes of the mishap and the damage or injury that occurred in the course.
- Expert--called to speak on a narrow issue.
- Rescuers and those who first made contact with the mishap personnel.

Local authorities often will have names of witnesses. Use PAO and the news media to help locate as many as possible. One witness may lead to another. Find out whether the witness was alone at the time of the observation.

Value of Witness Statement.

- Relative value by type; participant, expert, and observer.
- Perishable--details fade/mutate with time. Interview as soon as possible.
- Participants are the first priority, observers next.

Preparation for Gathering Witness Evidence.

- Identifying witnesses—first responders/rescuers, law enforcement, other witnesses, volunteers, pilot and crew, family members, co-workers, friends, etc.
- Selecting interviewer--consider the people involved.
  - Experience.
  - Training.
  - Knowledge.
  - Interest.
  - Rank/position.
  - Interview versus statement.

When to Interview.

- Interview as soon as possible after the mishap, before memories have significantly faded and conferring has begun.
- Witnesses should be isolated from one another.
- Exaggeration tends to creep into the interview after a witness has repeated the observations several times, or has been given time to reflect on the events.
- Witnesses tend to fill in blanks or voids in their observations after they have had time to apply logic and reason.
- They temper their statements in hopes the interviewer will accept their observations.

NOTE: Further interviews are always needed to confirm, clarify and elaborate concerns as the investigation matures.

Where to Interview.

- Preferably at the spot where the witness was at the time of the mishap to stimulate state

dependent memory.
- If not there, then in a quiet and private place.

Psychology of witnesses.

- Ego influence.
- Man is logical--will "see" what he needs to.
- Process of perception or witnessing.

Psychology of the interviewer.

- Ego influence.
- Character traits - good and bad.
- Interview versus interrogation mentality.

Interviewing Witnesses.

- Recording - Better than taking notes; accurate, less distracting.
- Put them at ease; quiet, undisturbed location; avoid interruptions.
- Recording - Know and test your equipment. Have backup recorder, if possible.
- They may be traumatized, be considerate of their mental state.

Not all witnesses need to be interviewed. Weigh the merit of spending time with selected witnesses. How? Read their statements. A written statement aids in determining which witnesses don't have much detail to offer, but it is not foolproof.

Witnesses can be anyone who might shed light on any of the causes of the mishap and what might have happened during the mishap.

Writing is difficult for some. Some witnesses know more, but write little. If you expect a witness knows more than he wrote (or ought to), interview. Some witnesses warrant interview regardless: crew, best vantage point, pivotal position in the mishap's background, aviation-acquainted eye-witness.

An eyewitness whose account begins, "I heard an explosion, turned and saw a fireball...," can only vouch for time and weather. The rest likely will be borrowed or speculative. The best question for such a witness is, "Can you provide me the names of any others who saw the mishap?" Ask by telephone.

Rank witnesses and start interviews with the best prospects.

How to Interview.

- Obtain identifying details: name, rank, position, and especially telephone number to ensure that follow up can be made easily.
- Have survivors and/or witnesses directly involved in the mishap read and sign the "Promise of Confidentiality Advice to Witness" form. See Enclosure 2 of the SEH Manual.
- To avoid loss of data, plan to record all interviews. **DO NOT** transcribed the recordings! Interviewer's notes are sufficient.
- Allay any discomfort, embarrassment, anxiety or shyness on the part of the interviewee.
- Make sure the tape recorder works and has a fresh tape in it ahead of time. Use it unobtrusively, but tell the witness it will be used. Use an omni directional microphone. Use a separate tape for each major witness. Note at the beginning of each taped interview if the interview is privileged or non-privileged and that the witness/survivor understands the concept of privilege.

- Keep the interviewee's attention on the subject, not on you and especially not on your official, potentially intimidating role as an expert and authority figure.
- Dress as you expect the witness to dressed. Your uniform may not be the appropriate attire.
- Approach the interviewee as an equal; make friendly eye contact, shake hands, etc.
- Never try to assume a position taller than the interviewee.
- Use first names if possible.
- Make sure you will not be interrupted. No phone calls; no knocks on your door.
- Witnesses shall not provide information under oath. Requesting them to do so is prohibited.
- Avoid interviewing witnesses before the full MAB. It can intimidate the witness or give the appearance of the "Long Green Table." Ideally, interviews should be one-on-one. This does not mean that the entire MAB may not want to interview some witnesses. This is meant as a general rule. When a witness has vital information, it is sometimes best to have them repeat their statements before the entire MAB, or playback their recorded interview.
- Have a model of the aircraft and a marking board available, they might help the witness describe maneuvers or help them remember more details by "jogging" their memory.
- Try to put the witness at ease; offer refreshments and a comfortable interview area. Giving something instills trust and prompts the witness to talk more freely.
- Don't interrupt or lead the interview.
- State your function, the purpose of the interview, who will hear the information and its confidentiality (if applicable).
- Tell the witness why their input is important to the investigation.
- A witness is a frail source of information; neither right nor wrong. A witness will take cues if you are unwise enough to give them. Audible cues and body language can indicate validation or disagreement, subtly smothering his account. The best technique to cultivate a witness' candor is to pay full attention, but maintain a benign poker face.
- Beware of jargon and terminology that is confusing or intimidating.
- Do not assist the witness with terminology. The statement should be in the words and terms the witness understands.
- Talk directly to the witness at his level of sophistication. Phrase questions in the witness' words; if he calls a drop tank a 'big gray thing,' you call it the same.
- Avoid contaminating the witness with information he has not offered. For example, if he has not mentioned fire, do not imply there was one by asking, "Where was the fire?" Instead ask, "Did you see smoke or flame?"
- Plan the interview so it flows systematically. This does not mean a prepared list of questions should be used, but rather that all areas of concern should be addressed.
- Avoid arguing with the witness concerning moral or legal responsibility of the crew, the Coast Guard or the Government. Attempt to keep the witness confined to observations related to the mishap. Witnesses have been known to regard the interview as a medium for voicing their opinions on operations, noise, and other activities annoying them.
- Avoid writing anything down. This may lead or distract the witness.
- Observe non-verbal communication.
- Tolerate silence.
- Use open-ended questions as much as possible. Start with a narrative prompting question like, "Please, tell me what first directed your attention to the aircraft and everything from that point on?"
- Do not interrupt this narrative. Sit back and let the witness talk.
- Reward the witness when he signifies his narrative is complete by expressing appreciation of

his time and effort.

- Obtaining a second narrative statement immediately following the first is often informative. Again, no interruptions.
- Consider playing the tape recording back to the witness to stimulate recall.
- After the narratives and tape playback, specific questions may ensue.
- Try to ask questions by repeating the witness' exact statement and ending with a question mark.
- Questions naturally become more specific as the interview progresses, but be careful not to get ahead of the interviewee. The more specific the question becomes the more likely it is to lead the witness and possibly confound his statement.
- It may be necessary to give the witness increasing amounts of information to help evoke details. Recognition memory always exceeds recall memory and recall may be enhanced if the proper recognition cues are provided. These cues should be surrendered grudgingly, little by little from general to specific information.
- Allow an eyewitness to manipulate a model or use a picture or map to show what he lacks words to convey. Classic example: 'spin' has specific meaning to a flyer, but a witness without aviation background might apply that term to movement about any axis. In like fashion "It went straight down" has been offered for every angle on a protractor, not just vertical entry. A model allows the witness to represent what he saw, even though unfamiliar with aviation terms. The same applies to taking an eyewitness to the place he saw the mishap: he might point out what he could not articulate.
- Give precedence to the first version. You will revisit some witnesses because new information you acquire will stimulate new questions. A witness will have had opportunity to reflect or absorb information from other sources and rationalize. Stories change. As witnesses confer, there is a tendency to a consensus account as each adopts detail from others, and loses or suppresses what had been a distinctly individual perspective. This is not necessarily devious, just a natural tendency to fill in blanks and cope with a sensational event.

Questions should move from the most general (the least leading) toward the most specific (the most leading). Note: General questions are not very leading and the information revealed by them is more likely to be accurate. With the specific question the witness may feel pressure to remember "something", and may report details he did not observe. The more specific question is leading and can contaminate the memory of the witness. It should be avoided or held until the very last.

Near the end of the interview, ask the witness to try to think of anything he might have missed or would like to add.

The very last question of the interview should be, "What do you think caused this mishap?" This question, when the witness is most comfortable with you (and least guarded), can give clues as to his biases.

Qualify the witness to establish his credibility as an observer. Witness vocation and experience should be documented.

Important points to remember:

- Challenging witness integrity is important but do not over play the "bad guy" role and never end on an antagonistic note.
- Immediately after the interview write down your initial impressions, thoughts and concerns.
- Occasionally some interviews are handled through written statements. But be aware many

people are limited by their writing ability. In general, extemporaneous interviews are better.

- DO NOT transcribe witness statements!
- Interviewers notes and summaries are all the MAR requires.
- Sworn statements are not used in the mishap investigation.
- Written permission must be obtained from COMDT (G-WKS-1) and (G-WKH) in order to use hypnotic or drug-assisted interviews. Such interviews should be considered only if critical safety-related information cannot be obtained by any other means. The subject must agree voluntarily and in writing.

The success of the interviewing phase hinges on the abilities of the investigator to bring together seemingly unrelated observations and emerge with a reasonable mishap scenario and possible mishap causal factors.

Guide for Witness Statements.

- Ask witness to review and sign "Witness Statement Promise of Confidentiality Advisory Form". See checklist # 27
- Instructions to Witness:
  - Please describe the sequence of events, including all details you recall.
  - Try to keep the statements in chronological order, but feel free to add any significant information you may recall even if out of sequence.
  - Include your best estimate of all times and time intervals.
  - Think over your statement before beginning, and then tell me in your normal conversational tone.
  - Please state:
    - Your name, rank, title, occupation, address, flight experience, phone number, email.
    - Witness location and activity when mishap was observed.
    - Time of day and weather conditions.
  - Please make special effort to describe exact details of observations of important signs as:
    - Smoke and fire (source or location, color).
    - Inflight signs of aircraft damage.
    - Unusual or abnormal flight characteristics.
    - Normal or abnormal engine noises.
    - All details of any observed ejection or bailout attempts.
    - Attitude of aircraft on descent.

Privilege and Confidentiality.

See Enclosures 2 and 10 of the SEH Manual and Checklist #13.

Privileged information is information provided under a promise of confidentiality or information that may not have been discovered without a promise of confidentiality. The deliberative analyses, conclusions, and recommendations of the MAB are privileged. Also privileged is information directly calculated by the MAB or developed specifically by/for the MAB.

Privileged information will be used for safety purposes only.

It is important to have a signed copy of the "Witness Statement Promise of Confidentiality Advisory Form". The form shall be attached to each witness statement. If a witness desires to make a non-privileged statement, the form will be marked as indicated. If a statement is taken by telephone, or other means where the witness cannot sign the advice form, the interviewing officer should note this and state that the privileged nature of statements was explained.

Be prepared with the correct forms by assuming that all witness statements will be privileged.

Promises of confidentiality will be granted individually (on a witness by witness basis) and may not be given automatically or on a blanket basis to all witnesses interviewed. It is not necessary to grant every witness confidentiality, it may not be needed.

Not everyone can be offered or granted a promise of confidentiality. This concept only applies to Coast Guard employees (active duty, reservist, civilian, contractors with prior arrangements and other government and NAFA).

A list of all witnesses interviewed shall be include in the Mishap Analysis Report annotating whether the individual was offered and accepted the promise of confidentiality.

CHECKLIST # 8--The Crash Site Visit.

Initial site survey.

- Control access.
  - Establish a control point and limit access to those who have a need to be there.
- Locate major components.
  - Check to see if anything major came off the airplane upstream.
  - Identify and mark major pieces of wreckage.
- Preserving the evidence and ground scars..
  - Don't scrape, rub, clean, or put together (mate) pieces of wreckage.
  - Protect ground scars until they have been analyzed/photographed.
  - Keep vehicle and people away so scars are left intact.
- Critical time elements.
  - Photograph major components before moving.
  - If fluid samples are necessary, get them right away.
- Moving the wreckage.
  - Don't move it unless necessary.
  - If required to move wreckage, first:
    - ID
    - Diagram
    - Tag.
    - Photograph.

Initial on-site examination.

- Airframe.
  - Did anything leave prior to impact?
  - Scratches and scrapes are important in establishing impact angle.
- Engines.
  - Were they running?
- Systems.
  - Were they operating? Electrical, hydraulic, etc.
- Instruments.
  - Photograph before moving.
  - Make note of what was are captured, what was not.
  - Use an expert if readings are important to investigation.
- Voice and Data Recorders (if one on the aircraft). See Checklist 28 and the SEH Manual
  - Avoid further damage; cover if required.
  - To not tamper with or try to open.
  - If found separate from aircraft, document location.
  - Follow G-WKS guidance.
- Fire patterns.
  - In-flight or ground fire.

MAB members benefit from a first-hand visit. Seeing accelerates comprehension and is essential to describing the mishap in your report.

Exercise caution and restraint. The site and wreckage will have hazards unfamiliar to visitors,

and visitors are inherently a hazard to evidence. Don't have another mishap while investigating this one. See checklist # 6.

Consider your first visit a reconnaissance. Withhold hasty judgments: understanding will take time and complimentary evidence not at the crash site. Resist the delusion of solving the mystery before sundown: you are likely to jump to a wrong conclusion.

Patience!

Walk wide around wreckage and ground scars to see the site from every angle. Look for indications of flight direction and descent angle, and then imagine the cockpit view. Take in the BIG picture, and have the photographer do likewise.

Satisfy yourself, that the aircraft is present or accounted for, missing parts may be reason to expand the search back along the flight path. If the four corners (nose, tail, wingtips) are on site, and the structure between them is too; still, bits and pieces (aileron, stores, turbine wheel, etc.) could have departed before impact. Helicopters have more than four corners, so the process is more difficult: blades usually fragment on contacting ground and can hurl hundreds of feet.

Keep your hands in your pockets.

Do not charge into the wreckage to open panels, flip controls or try switches.

Disorganized, undisciplined handling of the wreckage disturbs evidence and leaves no record of condition as found. The safety investigation has precedence over other concurrent investigations, but the MAB must take care not to spoil evidence, which others will also need to view. Sifting through the wreckage will keep until the MAB has a coherent plan to examine it by layers, like peeling an onion. Your initial focus is the large view, a reconnaissance.

Evaluate the surroundings, the distribution and condition of wreckage. Determine whether the wreckage is safe to begin work: fire out, ordnance and pressurized vessels made safe, fuel siphoned off. On sloping or forested sites, be wary of deadfalls: parts in trees, tree trunks/limbs severed but not fallen to ground, rocks precariously ready to tumble. Determine what will be needed to guard the site, look at and plot the scattered wreckage. Consider equipment and working parties needed to work the site, then consider how both will get to the site.

For the present, the concern is to exploit the wreckage in place for information it will yield as it lays, information may be lost when you begin to disturb it. When that course has been exhausted, concerns will turn to removing the wreckage to accomplish what could not be done in the wild or what is better done under controlled conditions.

The whole MAB need not stay at the mishap site longer than is required to appreciate the big picture, make initial assessments and post security. Once all have had a look, get down to business. Only one or two members need remain at the site to continue working and supervising the site. Consider who is better employed on the site, who has more urgent tasks elsewhere.

Do not work a crash site without light. Doing so poses high risk to personnel and evidence, with low prospect for reward. Post security and retire from the site before dusk (or make provision for abundant artificial lighting). Allow time for departing personnel to pick their way back to a roadhead before light fails.

While touring the site or riding back, exploit your captive audience and their newfound common focus. Pose questions.

- What can be determined (speed, flight path, attitude, configuration) from the lay of the wreckage, ground scars and degree/location of aircraft deformation?

- To what extent can the wreckage be examined where and as it sits?
- What are the local Engineering or engineering capabilities?
- What assistance is needed on site?
- What personnel, equipment or items will facilitate the following days' activities?
- Have a member take notes: these form a list of things to do, things wanted but deferred, and support the MAB will need.

Photographs.

If possible and/or necessary, have a photographer detailed to the MAB for the first day or so after a mishap. If one is not available, take your own photographs. Need for a dedicated photographer diminishes quickly.

Aside from documenting conditions as found, photographs can record the MAB's manipulation of the wreckage.

It is not enough to tell someone, "Shoot this," and walk on. The photographer's product will be of better use if everyone who requests a shot also tells the shooter what the picture is supposed to show. Specify the following as appropriate: close-up or wide angle, background (in-focus or not), light (more, less), viewing angle, other object in view for scale, anything to make a picture a better exhibit.

Obtain shots of anything exciting interest, but ensure you have a before view of everything likely to be disturbed by manipulation (yours or others'). The cockpit (switches, levers, gages) and engine control linkage (input and feedback mechanism) are essential.

Photographs should show damage, impact areas, metal fractures, flight path, etc.

Color film is cheap; prints are dear. Shoot liberally: until the investigation is far advanced, no one knows which photographs will be the best exhibits for a report, but opportunity may have passed. You can not take too many photographs.

Multiple 8x10 glossies of every shot are wasteful: you will be inundated with excess photographs and expense. Request a proof sheet of each roll, then select the views you want produced in full size. New digital copiers make excellent reproductions, so obtaining multiple prints of photographs for desired MAR enclosures is possible from one master.

Scanned color images for reproduction in the formal report are preferred over the use of actual photographs.

Number pages containing photographs (g-1, G-2, etc).

DO not mark photographs; place an index of photographs at the beginning of the Tab. Do not refer to privileged information on the page captions or in the index.

Staged photographs are considered privileged. Place staged photographs near the related text for easy of reviewing.

Pointing with a finger or other device or placement of measuring device does not make the photograph privileged.

Re assembling or reconstructing damaged parts or aligning parts to show fire patterns or impacts marks are examples of staged photographs. Depiction of cockpit indications for a given set of assumptions made by the MAB or described in witness statements are staged photographs.

Proof sheets also make it easier to share none privilege photographs with other investigation boards. First cut out or cover the privilege photographs.

NOTE: "Staged" photographs indicate MAB deliberations, and therefore can become privileged information.

NOTE: DO not include photographs of deceased personnel in MAR.

NOTE: Include only photographs that aid in understanding the mishap

Unless a photograph represents a speculation staged by the MAB, it may be considered real evidence and shared with concurrent investigations, the engineers or technical representatives you consult.

- Why photographs?
  - Record of something that may change (switch positions).
  - Illustrate a point (similar switches).
  - Explain something (failed part).
  - Demonstrate a point (striking switch).
  - Convenient reference while reviewing/writing the report.
- Who?
  - Professionals (guidance needed).
  - FSO's have been trained to supervise the photography.
  - Amateurs (best to use MAB Members). Quality of results may suffer due to inexperience and equipment quality.
- How to photograph?
  - Label or record to avoid "why did we take this?".
  - Use studio for better lighting.
  - Ruler to provide size comparison.
  - Good and bad for comparison.
  - Over shoot and under print. Use contact prints.
  - Color to show discoloration, paint smears, etc.
  - Black and white to show detail.
  - Overhead shots will show general crash site.
  - Take shots of main wreckage along flight path.
  - Take shots of main wreckage from aircraft cardinal headings,
  - Consider including pointer to indicate north.
  - Detailed views of specific components:
    - Cockpit.
    - Switches.
    - Gauges.
    - Circuit breakers.
    - Flight controls.
    - Engine inlet and outlet (use flash).
    - Fuselage skin showing soot pattern.
    - Equipment with curious damage.
    - The most charred or burned area.
    - Ground gouges and impact marks.
    - From position of each witness to show their perspective.
- Scene coverage (aerial):

    - Overall area (may help with diagramming).
    - Views from flight path.
    - Consider reflying the flight path using a video camera (same time of day with similar weather if possible).
- Survivor coverage:
    - Multiple views in entire flight equipment.
    - Close-up views of damage to flight equipment.
    - Appropriate views of injuries out of equipment.
    - Close-ups, if helpful.
  - Take shots of curious, unknown damage.
  - Use the type of film and equipment readily available/normally processed at the photo lab chosen to process the mishap photographs.
  - Consider using camcorder as refresher for MAB viewing. Use with dialogue to keep memories fresh. Destroy after use or send to COMDT (G-WKS-1).
- MAR photographs--keep to a minimum.
  - Crop to highlight area of concern.
  - Use plastic overlays to provide captions, etc.
  - Keep photographs included in the MAR to the minimum required to tell the story.
  - Consider colored copy prints vice photograph reprints to save money. You can also easily write on color copies.
- Key points.
  - Manage the photographer.
  - Developing, control quality and access.
  - Manage the printing.
  - Make each picture significant.
  - Avoid gee-whiz pictures.
  - Make the photograph tell your story.
  - Factual (things as they are)—Non-privilege (releasable).
  - Analytical (staged/deliberative)—Privileged (not releasable).
  - Control picture negatives (MAB owns all negatives as per COMDTINST M5100.47).
- Digital photography basics.
  - Advantages of digital photography are.
    - Much quicker, instant review of image.
    - Can be cheaper.
    - More versatile.
  - Disadvantages of digital photography are.
    - Image quality (image resolution).
    - Image authenticity and integrity (is the image real and unmodified).
    - Image production and storage (how are the images made visible and how are they stored for later use).
- Digital photography for mishap investigation.
    - Digital images may be used for recording information during the investigation of an aviation mishap.
    - Great for providing those not at the crash site instant photographs of the mishap

scene.

- Use a camera with optical viewfinder, greater that 2 mega-pixel resolution (currently 3.1 –3.2 cheapest and best deal), zoom/macro lens and flash.
- Avoid cameras with proprietary features (batteries, computer cords and memory media, etc)..
- Frequently back up pictures onto permanent storage media such as CD-R.

Privilege and Photography.

- Most mishap photographs, with the exception of staged photographs are considered factual and nonprivileged.
- Photographs of injuries, fatalities and autopsy photographs are considered sensitive information and are not for general distribution.
- Photographs contained in the Medical Officer's Report are considered privileged.
- The placement of captions and markings on a photograph may show MAB deliberative process and thus, may make the photograph privileged.

Wrap-up of Site Visit.

Offsite. Briefly, reconvene the MAB. Members may have gone about tasks separately, but their product is necessary for common information. To build the MAB's grasp of available evidence and bring all abreast of developments, have each member present his progress and findings since last convened. Confine discussion of the mishap to observations and facts.

Determine what will be needed for the continuing field investigation. As discussed previously, you first exploit the wreckage where and as it is. Excavation, lifting, carriage, relocation and disassembly follow in due course...later.

Confine discussion of the mishap to observations and facts, and how to get more. Without a substantial body of evidence, deliberations on cause are premature.

Plan. Make assignments. Do not count on all going to the site daily. Once all have seen it and have a common foundation, employ each according to his talents and availability.

Consider whether the MAB needs augmentation with additional members, or whether it needs on-site technical specialists (not admitted to membership or privileged access). Initiate requests for such assistance to COMDT (G-WKS-1).

Preview tomorrow's activity.

Interview witnesses. Read their statement before scheduling an interview. It serves no purpose to reserve the time, then find a particular witness has nothing to contribute.

Diagram/survey/plot site and wreckage as appropriate.

Review records, tapes, radar data in descending order of their likely potential (varies with mishap context).

Outline wreckage examination on site (items and sequence). List tools and people required.

Adjourn in time to allow members to do their independent work, eat and rest. You're in this for more than a few days. Begin to pace yourself and the MAB members.

CHECKLIST # 9 -- The Investigation and Analysis Phase.

The Basic Examination.

The initial investigative work is where factual evidence is collected from the field and from witnesses, records, autopsy, etc. This phase also covers the examination of management and supervisory processes involved. Keep an open mind, do not start to develop theories during this phase. There are two areas of investigation of the actual material and aircraft wreckage; the crash site and the hanger or laboratory facility.

Crash Site Investigation.

This investigation is important because the information available is fragile, perishable, and easily destroyed. Generally this information cannot be determined or recreated elsewhere.

No other MAB Member should presume to make decisions involving the crash site unless such actions have been discussed and previously cleared by the MAB President and the FSO. The FSO is usually the only one trained to recover the evidence available at the crash site. He should be given absolute control over this phase. In some instances the Engineering Member may have received training in helicopter or aircraft accident investigation. If so, the Engineering Member should assist the FSO.

Careful examination of the extent of the damage and distribution of the wreckage will help to determine the type of mishap, i.e., spin, stall, fly into the ground, uncontrolled flight. The items of evidence obtainable through crash site analysis are:

- Angle of impact.
- Airspeed at impact.
- Attitude at impact.
- Evidence of inflight fire/ground fire.
- Evidence of inflight structural failure.
- Aircraft configuration.
- Whether the power plant was developing power.

Hangar, AR&SC, and Laboratory Investigation.

The second phase of the investigation is important because of the validation it will give the MAB's deliberations. It can also give a detailed view of the specific origin of failure and Coast Guard wide impact of malfunctioning components.

The Engineering Member, and any other member of the MAB, the President thinks is essential, should travel to the laboratory and be present for critical engineering investigation. This MAB presence guarantees positive custody of the part, that you receive answers to the right questions, and that the engineers have access to amplifying information that could make a difference in their findings.

An engineering investigation (EI) is tightly focused on objects the MAB submits for examination, not the whole aircraft. Depending on the components/parts, they may go to separate destinations, resulting in as many EI reports. AR&SC personnel can help identify parts and determine whether they merit further examination or if their condition is unremarkable except for damage explained by impact or post-crash fire. AR&SC personnel can accomplish some detailed tests, measurement or examination of selected exhibits the MAB presents. When AR&SC sends personnel to the field, one will be designated lead engineer and provide a report of the summary observations or determinations made on the wreckage.

Not everything merits engineering investigation. An article known or suspected to have malfunctioned or failed warrants investigation if the question--Why?---has not already been answered. The rationale for others should be pointed question(s) the MAB expects can be answered by an engineer investigation and/or examination. The MAB's charter to determine the mishap cause may not be passed to another as random EIs in hopes something will appear.

An engineering investigation report is an authoritative source of factual information, accessible to safety, administrative or legal proceedings and to public inquiry.

An engineer investigation is limited to what can be determined with confidence from the material exhibits, component history cards and Engineering record---hard evidence. In the absence of a solid determination among exhibits (it happens), you may be frustrated that you cannot elicit an engineer's speculation. As a scientist, he is bound to rely on hard evidence, which may be too limited or obscured by damage. You might be tempted to "sweeten the pot" by offering information you can substantiate only from privileged sources. Don't! It remains the MAB's job to determine mishap cause by synthesizing an explanation from a combination of the real and the privileged evidence.

Items of evidence that could be determined by laboratory examination include:

- Position of flight controls at impact.
- Readings of instruments.
- Causes of contamination.
- Whether a component was operating at impact.
- Electrical sources of ignition of an inflight fire.
- Identification of illuminated light bulbs.
- Trim settings.
- Power plant malfunctions.
- Propeller or Rotor RPM at impact.

Flight and Survival Equipment.

Aviation Life Support Equipment (ALSE) support should be requested for mishaps involving major injury or fatality, or when inadequate performance of ALSE is known or suspected. ALSE support may be requested COMDT (G-WKS-1).

Survival equipment is intended for one-time use. Even for a successful egress or survival situation (no apparent equipment problem), recovered ALSE equipment should be shipped to AR&SC for examined and eventual disposal.

Analysis of the Evidence.

Make a list of possible scenarios or theories supported by facts. Test these theories; if further evidence is necessary to either prove or disprove a theory, then this evidence must be obtained.

In-depth Investigation.

As the investigation narrows the suspect scenarios, there will probably be the need for information obtainable only by detailed disassembly of components and/or laboratory analysis (AR&SC or manufacturer level engineering investigations).

Final Analysis.

Once all the possible evidence has been gathered, the MAB must ascertain the cause factors or the most probable cause factors. In almost every mishap there are going to be anomalies that cannot be explained. You should go with the preponderance of evidence. You are not in a court

of law where everything must be proven beyond a shadow of a doubt. If you have evidence that a hazard may have caused the loss of an aircraft or injury to personnel, then it should be corrected.

Conclusions.

Make sure you dig deep enough for the cause factors. A finding that the aircraft was destroyed because the pilot put it into a stalled condition during a night search is not adequate. Pilots are expected to complete routine missions of this type. If the question of "why?" cannot be answered, then your investigation is not complete.

Recommendations.

Make sure the recommendations will correct the situations that caused the mishap, not just treat the symptoms. The recommendations should spell out in detail what, in the MAB's best judgment, would prevent each causal factor from being repeated. (The acid test for a recommendation is: would the mishap have been prevented if the corrective action were put into effect prior to the mishap occurrence?) Treat each recommendation separately.

"Other Findings of Significance" /Additional Findings.

Findings discovered during the investigation not a cause or result of the mishap shall not be included in report. See Checklist # 19. These hazards should not be included in the MAR, since their inclusion would serve to cloud the issues pertinent to a specific mishap. The proper way of reporting such hazards not relative to the mishap is via the chain of command.

CHECKLIST # 10--Wreckage Recovery.

- Avoid further damage.
- Reconstruction.
  - Time consuming and expensive.
  - May be necessary in case of in-flight breakup or fire.
- Storage.
  - Indoors if further investigation is necessary and weather is a factor.
  - Away from unit, to avoid becoming a "reminder" to personnel.
- Release of wreckage.
  - Release to AIM investigators or Engineering as appropriate.

Not on Day One, rarely on Day Two, but sometime...the MAB will foresee an end to working with the wreckage at the crash site.

Plan the recovery, and then stay engaged (directly or with another member as proxy) at the site to supervise its execution. Remember some of the work will be performed by personnel whose only qualifications are availability and fitness for heavy lifting.

Consider where to relocated the wreckage. This depends on the MAB's future intentions. A layout (reconstruction) might occupy four times the floor space of an intact aircraft. A less extensive reconstruction or handling to remove engines or actuators for examination takes less space. Final storage for packed boxes and chunks of aircraft takes the least space. A crane or forklift requires headroom to lift and clear space at the sides to maneuver. When you have decided the level of activities, arrange secure space accordingly.

It is preferable to have an area isolated from the unit to store and examine the mishap aircraft and wreckage. This avoids the mishap aircraft from becoming a source of frustration or regret for the unit personnel.

Recovery of crash damaged components whether from land or water should be attempted whenever the material is needed for a complete investigation. If you need the material, ask for recovery. Nothing is impossible. Let Commandant decide if the recovery is not feasible because of cost or technology. When asking for assistance, use the term "wreckage recovery for mishap investigation purposes," rather than "salvage."

Supervise and Document. Wreckage recovery, whether from a swamp, ice floe, remote mountain, deserts, or from 10,000 feet of water, requires close supervision by members of your MAB to minimize and document damage done to the components. Plan to videotape the recovery, if feasible, to indicate damage incurred during recovery vice mishap damage. Remember, damage done in recovery does not count toward the total cost of the mishap.

Take Your Time. The key to any wreckage recovery is not rushing off half-cocked. Do things at a measured deliberate pace with adequate planning to insure a successful recovery.

The FSO has been trained in how to ask for help in wreckage recovery and has been introduced to the concept of close supervision by the MAB during recovery efforts.

The recovery phase can be the most dangerous in the investigation. Take care recovery actions do not cause another mishap. Too often in the past, over-enthusiastic recovery attempts have endangered personnel.

Decide how to collect it. Wreckage will have been located; small parts may have been flagged or marked with surveyor's tape to make their locations more noticeable. The pickup process usually involves people for small parts and machines for heavy lifting. Boxes on pallets staged throughout the site facilitate pick up by hand and deposit without a long trot. Whether you fill boxes according to location (crater, secondary impact site, periphery) or by types of parts (airframe, engine, controls, etc.) is a matter of choice. Objects too big for boxes can be palletized or lifted directly. Laden pallets and big objects should be lifted by rough terrain forklift, crane or by helicopter.

Transportation. Flatbeds for long, wide or tall pieces; stake beds suffice for the rest. If some disassembly is required, consider carefully before hand because doing so might separate items whose association should be noted before evidence is lost. It is helpful to line a flatbed with a big, throwaway tarpaulin and wrap it up-and-over the load before tightening the straps; this prevents small parts (it's all evidence) from becoming highway litter. The tarp will be junk when the job is done due to tears and leaking fluids.

Avoid rush hour traffic.

Offload and place boxes and objects to facilitate access for further work. For example, make room to maneuver hoists, toolboxes, engine stands and so forth.

CHECKLIST # 11 -- Recovery/Salvage of Submerged Wreckage.

The following discussion presumes underwater salvage has merit for mishap investigation purposes and is approved. There are instances where, despite the absence of wreckage, enough is known from other evidence to form a high-confidence conclusion on cause(s) and to forego salvage. Examples of such evidence are crew/eyewitness statements, radar data, taped communications, deployed flight incident recorder, facility conditions (know defective equipment, NAVAID interruption during approach, fuel sample from delivery point) and documentary evidence (personnel, aircraft).

Search and salvage are not cheap and are not without risk to personnel and equipment. Whether salvage ops are undertaken starts with the MAB. A perfunctory request, without a persuasive case that the aircraft (or selected portion) is essential to discover cause, could be denied. The MAB must sift through all available evidence and decide whether it has sufficient evidence to explain the mishap or it needs more. Finally, will the wreckage likely have answers to the questions the MAB has not resolved? If yes, continue.

Search refers to finding the wreckage. There must be a successful search before there can be a salvage attempt. Wind, current, bottom conditions, impact angle, velocity, or aircraft fragmentation can complicate a search.

Location, accessibility and water depth determine what will be required for salvage and who can do it. (And if it can even be accomplished)

Salvage Request.

As MAB President, your request, justification and amplifying information may be transmitted in a supplemental mishap report.

Reasonable effort will be made to recover crew/passenger remains incidental to wreckage recovery, but the basis for wreckage recovery is not recovery of remains.

The following four questions are the exclusive basis for justifying salvage.

- is wreckage necessary to determine cause?
- is wreckage a hazard to navigation?
- is an item of national security interest at risk?
- is there an environmental concern?

Factors considered by others before mounting a salvage operation. Since an MAB opens the discussion by its request and is closest to sources of the information, be prepared to address factors others will need to consider:

- wreckage position (pinger, sightings, floating debris).
- site conditions/accessibility (depth, bottom topography).
- aircraft's entry aspect (incident speed/angle, breakup).
- water temperature/date of immersion (bears on corrosion).
- equipment/ordnance requiring special handling.
- remains presumed to be in aircraft. Reasonable effort will be made to recover crew/passenger remains, but the basis for salvage is not recovery of remains.

Since aviation units lack the equipment or personnel trained to accomplish water recovery, the MAB will be asking for assistance outside the familiar realm. The MAB must assure the merit of the wreckage recovery. Others responding to the request will attempt to determine: difficulty, likelihood of success, assets available/required, expense, funding sources.

COMDT (G-WKS-1) will weigh the merit and expense, but probably lacks recovery assets. If they concur, they will forward the request to Commandant.

Recovery/Salvage Approved.

Your request is approved. Do not presume the wreckage will be delivered to your hangar door. Count on participating in the wreckage recovery.

What had been a discussion of the hypothetical now becomes planning for an operation. The message, notifies all of approval, is also a tasker to the command(s), which will take it for action. You will have collected a list of names, numbers, PLADs and office codes in the course of requesting and rationalizing the salvop. All the preceding are your new pen pals. Some will become shipmates. Keep them informed. Coordination is essential to preparing for salvage and the ultimate offload and shipment of recovered wreckage.

Planning.

Planning and operations require knowledge the MAB is best suited to provide, directly or by consultation among aviation resources (AR&SC systems/structural engineers, airframe/component manufacturers). The FSO and Engineering members can handle issues that arise. One or both should sail on the operation and bring appropriate reference materials (manuals, pictures, diagrams, parts lists).

Details to resolve are:

- recovery vessel port location.
- probable sailing date.
- berthing slots available to MAB, engineers, tech reps.
- message release authority for MAB member.
- alternate communications (E-mail, INMARSAT phone).
- provision to store/evacuate remains, if recovered.
- decontamination/wet storage for components with nonvolatile memory.
- ship's crane capacity if handling intact, heavy aircraft.
- drawings to show lifting points, equipment location.
- offload location for recovered wreckage.
- critical parts' description (use nomenclature on the component's label).

If the aircraft has fragmented, a diver will see many, loose 'black boxes.' A rudder actuator may look like a gear actuator. A TACAN box may not be marked 'TACAN;' its label might be ABC-1234. Be prepared to add color, dimension or other descriptors to help discriminate trash from treasure, plot the wreckage and fetch the prize you want.

If divers are to use aviation-peculiar parts (lift fittings or straps) or tools (specialty fasteners, torque busters), make them available in time to hold school on their proper installation or use---before sailing.

If the port has an airfield nearby, divers will benefit from a brief familiarization with a static aircraft---you can show them what parts of high interest look like, where they are located, hazards to avoid, etc.

The MAB ashore or its representative afloat will be asked again and again how much of the aircraft is needed for the investigation. Until there has been a significant development, the answer is the same as originally requested and approved: all of it. In most cases, the reason for undertaking salvage is the need for as much wreckage (evidence) as can be found.

In exceptional circumstances, investigators may have clues, allowing a focus on select components (an engine, a transmission, a fire location). When that is possible, the MAB should build a prioritized list of items it wants and another of items it considers little use for investigation. This is high-stakes poker. If hypothesis A does not pan out when the A-list is examined, it may be hard to develop an alternate hypothesis with parts on the ocean floor. Return engagements are rare. Be wary of yielding the salvage opportunity.

Underway.

The vessel arrives and puts divers or drone in the water to relocate and survey the wreckage.

Having a notion of wreckage distribution will help locate parts not yet been found, but which belong in proximity to others whose position is known. Plot (in pencil) the topography and wreckage seen through an underwater camera; refine it as dives continue. At intervals, have the diver or drone operator pan all around, stopping in cardinal directions to show wreckage and bottom contour. The plot may be crude: direction-and-distance are vaguely appreciated through a remote camera. Without a camera, try to do the same by debriefing divers one by one.

Pickup proceeds slowly, at a rate that may exceed the time/money allotted. Inventory parts recovered to know what high-value pieces you have, or have not, recovered.

The MAB and the G-WKS-1 Advisor should join the on-scene commander in drafting daily SITREPS. The same group should make consecutive assessments of the likelihood of completing salvage when constrained by funding or future commitment of assets. Before ending an operation, determine whether you have the desired aircraft components.

No later than breaking moor to sail back to port, make plans to receive the wreckage at pier side and pass those plans to a coordinator ashore. The ship's captain knows he can crane the wreck off his deck. His problem will have ended; yours enters a new phase.

Got boxes? Got trucks and forklift? Got hangar space, tools, work details? If the offload port is remote, arrange to travel to it or to bring the wreckage to your location. If AR&SC or factory engineers did not accompany the salvage, but are wanted for component examination, notify them of the place and time you will commence activity ashore.

Beyond layout and external examinations, consider what components may be candidates for engineering investigation. Consider how they will be removed from the wreckage (people and tools), preserved, packaged and freighted to cognizant engineering facilities.

Pingers.

The long name is underwater acoustic locator beacon.

Pingers are off-the-shelf items used in civil aviation to mark flight data recorders.

In the 1980s, pingers appeared in military aircraft to mark submerged wreckage. An enduring truth has been that finding wreckage can take longer than hoisting it.

Current installations in military aircraft use a lithium-based battery with 6-year shelf life. Signal duration is 30 days. But may have a delayed actuation of several hours or days.

When considering search, knowing when the pinger will sound off and when the signal will cease are crucial. Refer to the aircraft logs for pinger model, delay capsule setting, and battery expiration.

A pinger emits a sub-audible click 20 times per minute. The signal strength is low, and range may be as short as one mile. Not all ships are equipped to receive the signal, but the towed

equipment is available and easily used.

USN EOD tams have DF equipment for locating pingers and the training to find and retrieve pingers on ditched aircraft.

CHECKLIST # 12—Flight Surgeon/Medical Officers Report – The Human Factors Investigation.

Flight Surgeon/Medical Officer Responsibilities.

The Medical Officer's portion of the investigation includes the human factors aspects (human errors, crash survival, escape system/egress, and rescue/survival) and general investigation supporting information (cause of injuries and death). The Medical Officer's Report (MOR) requires a FS/MO and those requested, such as an aviator, an Aerospace Physiologist or an Aerospace Psychologist to assist.

It is important for the FS/MO to remember the information received during the course of the investigation could be based on "opinions" and should not be include the report unless it is supported by physical facts, witness statements, and/or statements made during medical interviews. However, if information about the physical and/or psychological condition of a crewmember is available from a source who wishes to remain unnamed, and such information is considered critical to the investigation, the FS/MO may include the information in his analysis.

The MOR provides the MAB valuable, but sensitive, information on the personnel factors of the mishap. The MOR is, essentially, a privileged document. It is part of the Mishap Analysis Report (MAR).

Flight Surgeon/Medical Officer's Initial Duties.

- Provide care to survivors--**#1 priority.**
- Perform post mishap physical exam, toxicology and special tests.
- Impound medical and dental records.
- Record survivor's statements
- 72 hour histories (see below).
- Initial history.
  - Medical/dental records.
  - Spouse/close friends' interviews.
- Other flight surgeons or aerospace physiologists may help, especially if workload warrants.

Flight Surgeon/Medical Officer's Crash Site Duties.

Preserve and document perishable evidence, especially, personal, survival equipment; photograph before touching or moving.

Move only what's necessary. Stake and label for cross reference (coordinating system to the impact heading center line).

- Perishable biological evidence takes priority.
- Document remains—plot/diagram/photograph.
- Decedent Affairs COMDT (G-WPM) coordinates and handles final disposition of remains.
- Post-mortem exam. Armed Forces Institute of Pathology (AFIP) is chartered to provide this support for each service.
- Document conditions at scene (visibility, cloud cover, sun angle, shadows, wind, snow, etc).
- Correlate injuries with mishap damage.
- Evaluate restraints, survivability, egress, survival and life support equipment.

Flight Surgeon/Medical Officer's Autopsy Duties.

FS/MO should discuss respective duties with AFIP. Remember, AFIP augments the FS/MO.

AFIP can provide:

- Crash site autopsy protocol.
- Toxicology.
- Correlate injuries with mishap damage.
- Evaluate restraints, survivability.
- High technology, such as Scanning Election Microscopy (i.e. can discriminate if heat damage was caused by friction or fire).
- Pathological analysis (Interpretive Consultation Report).

In-Depth Human Element Investigation.

The FS/MO's report should cover the following applicable topics:

Background.

Cultural (where raised: farm, city).
Family and upbringing (attitudes, permissiveness, discipline, sense of responsibility).
Interests (intellectual, mechanical, sports, hobbies).
Ambitions (motivation to fly and past flying).
Pursuits requiring good vision (hunting).

Physical.

Condition.
Stamina (exercise program).
Perception (sight, hearing, tactile feeling).
Anthropometry (fit, field of view, reach, activation range).
G-tolerance.

Physiological (factors which incapacitate, confuse, disorient, distract, dull).

Hyperventilation.
Hypoxia.
Acceleration loss of consciousness.
Spatial/roll-axis disorientation.
Decompression sickness (evolved/trapped gas).
Diet (was member dieting?).
Airsickness.
Dehydration.
Heat, cold, noise, vibration.
Self-imposed stress (hangover).
Fatigue (short-term transient/acute, accumulative, circadian rhythm).

Psychological.

Pre-conscious (reactions, skill and technique, habit patterns).
Attention (alertness, appropriation, span, distractibility).
Cognitive ability (learning ability, intelligence, common sense, ability to tell what's important).
Cognitive processing (thinking, thinking ahead, judgment, avoidance of doing dumb things, learning from mistakes of others, sense of priorities, staying ahead of aircraft, thoroughness, anticipation).
Cognitive capacity (multiple simultaneous inputs, adaptability, language, knowledge).
Discipline (control, punctuality, planning, preparation, mental rehearsal, decisiveness, professionalism).
Temperament (character, personality, aggressiveness, confidence, self-reliance,

predictability, courage, impulsiveness).
Perspective (big picture, appropriate objectives).
Awareness (ability to acquire and maintain situational awareness).
Psycho-motor complement (coordination, skill, “hands”).
Affective behavior (emotions, moods).
Life style.
Insight (awareness of own limitations).
Talents (general traits).

Psycho-social.

Ego (self-esteem, role concept, response to peer pressure, tendency to “press”, prove self, show off).
Confidence.
Concern for others (communications, wingman consideration, crew coordination, leadership).
Sense of humor.
Duty relationships (supervisor, peers, subordinates, crew members).
On duty stressors—real or perceived (job promotion, flying upgrade, additional duties).
Attitude (toward job, flying, this mission).
Perception of this mission.
Off duty relationships (family, buddy, girl/boyfriend, financial, social, religious, political, divorce, recent death, serious family illness).

Pathological.

Injury mode (deductions from exam, lab, X-rays, autopsy remains).
Medical (acute, sub-acute, chronic, waivers, last sick bay visit, last grounding).
Potentially incapacitating (seizure disorder, hypoglycemia).

Pharmacological.

Any substance potentially affecting perception, balance, alertness, etc. (tobacco, alcohol, medications, illicit drugs, over the counter meds, quinine, toxins).
Tendency to self-medicate, takes spouse’s pills: food fads, vitamins, supplements, etc.

72-Hour History.

Chronological summary of activities, rest/sleep, foods and liquids consumed, distractions/stressors, etc. for each crewmember for the 72 hours preceding the mishap.

Human Factors Investigation.

Teamwork is required (overlapping interests and expertise should be exploited).

- FS/MO initially addresses the human performance areas, which are physiological, psychological, psychosocial, and biomechanical in nature.
- Pilot member comments on issues in cockpit design, operations.
- Aviation Life Support Equipment Member (if present) comments on life support equipment, survival equipment and egress issues.
- FSO comments on safety, organizational institutional or management as well as facilities and services concerns.
- Engineering Officer comments on equipment and engineering problems.
- MAB President expertise varies but is especially valuable in management or organizational concerns.

The FS/MO should explore the following topics for each crewmember:

- Selection. Source of commission.
- Training. Event proficiency, pertinence to mission.
- Command and Control. Supervisor's personal knowledge of victim's capabilities. Control organization's communications, flight plan, advice.
- Basic Flying Unit. Station milieu, peer pressure.
- Mission. Within capabilities, perception of, special nature (real/perceived), preparation, briefing, mission changes, commitment.
- Weather. Visibility, horizon, wind/shear, sun glare, sun angle, shadows.
- Terrain. Height cues, obstructions, flora/fauna, perspective cues, vertical development.
- Aircraft. Cockpit design and location (switchology, displays, fumes, communications, comfort, optical devices). Vision impediments (canopy scratches, posts, reflections). Configuration (weight, CG symmetry, pitch sensitivity). Performance (stall indication, stick feel feedback).
- Escape. Standard egress, last 9D5 training (if helicopter), problems.
- Temporal distortion.
- Survival/Rescue. Problems, equipment function, radio/beacon.
- Engineering. Selection, training, supervision, commitment, working conditions, professionalism and sense of responsibility of Engineering personnel.

Crash Survival Investigation.

The purpose of the crash survival portion of the mishap investigation is to identify preventable injuries and report them in a format, which will assist in improving crashworthiness. To accomplish this, the types of injuries must be defined and related to the impact conditions to determine underlying causes. This investigation normally will be performed by the FS/MO.

- Aircraft Structure. The ability of the airframe to maintain a livable space for the occupants throughout the crash.
- Restraint System. The strength and design of restraint system preventing occupants, cargo or equipment from becoming dislodged from the aircraft structure. For an occupant, the restraint system is the combination of the seat, its fuselage attachment, and the restraint harness.
- Energy Absorption and Deceleration Environment. The ability of the aircraft system to limit the intensity or increase the duration of deceleration experienced by an occupant during a crash.
- Environmental Hazards. Barriers, projections, loose equipment or other injurious objects in the immediate environment (strike envelope) of an occupant, which may cause contact injuries.
- Post-Crash Hazards. Threats to occupant survival posed by fire, entrapment, drowning or exposure following the impact sequence.
- See Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation. (http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm.)

CHECKLIST # 13--The Concept of Privilege.

What is Safety Privilege?

- See Enclosure 10 of the SEH Manual.
- Privileged information will be used for safety purposes only.

Privileged information is information provided under a promise of confidentiality, or information, that may not have been discovered, or provided without a promise of confidentiality. The deliberative analyses, conclusions, and recommendations of the MAB are privileged. Information directly calculated or developed specifically by or for the MAB, is privileged only if disclosing the information reveals the MAB's deliberative process.

Note: Using privileged information for any purpose other than safety would compromise the credibility of future assurances of confidentiality.

The purpose or rational for privilege is to:

- Overcome any reluctance to reveal complete and candid information pertaining to the circumstances surrounding a mishap.
- Encourage MAB members and endorsers of the aviation MAR to provide complete, open and forthright information, opinions and recommendations regarding a mishap.

Privileged safety information shall not be used:

- As evidence or to obtain evidence in determining misconduct or line-of-duty status of killed or injured personnel.
- As evidence to determine responsibility from the standpoint of discipline.
- As evidence to assert affirmative claims on behalf of the government.
- As evidence to determine the liability of the government for property damage caused by a mishap.
- As evidence before administrative bodies, such as Flight Evaluation Boards, JAG investigations, etc.
- In any other punitive or administrative action taken by the U.S. Coast Guard.
- In any other investigation or report of the mishap.

In addition, it should be noted:

- Witnesses shall not provide statements to the MAB while under oath. Requiring them to do so is prohibited.
- Witnesses shall be advised, in writing, of the purpose of providing their statement and the limited use to be made of the statement. They will read and sign the Witness Statement Promise of Confidentiality Advisory Form. See Figure 2-1 in Enclosure 2 of the SEH Manual.
- MAB members shall not, nor may they be requested to, divulge their own opinion or any information, they have arrived at, or to which they were privy, in their capacity as a member of an MAB. 4
- Any individual having knowledge of the content of an aviation MAR is prohibited from releasing that information. Any individual contacted either formally or informally for such information, shall immediately contact COMDT (G-WKS-1) for guidance. This includes requests made under the Freedom of Information Act (FOIA).

NOTE: Unauthorized disclosure of privileged information is a criminal offense punishable under Article 92, Uniform Code of Military Justice (UCMJ).

COMDT (G-WKS-1) and (G-LRA) determine the privileged or nonprivileged status of all

information contained in the MAR. All questions concerning privilege should be directed to COMDT (G-WKS-1).

To What Does it Apply?

- Photographs staged by the MAB revealing the deliberative process are privileged.
- Photographs of a sensitive nature such as autopsy photographs or other photographs of the deceased are not privileged but are handled as such.
- The Privacy Act does not protect deceased persons, but information sensitive in nature maybe withheld to protect the privacy interests of surviving family members.
- All other photographs are non-privileged. However, captions and markings placed on photographs that are speculative or indicative of the MAB's deliberative process are privileged. (The captions and markings only, not the photograph).
- Videotapes documenting or depicting the mishap scene or wreckage, including flight deck videos and videotapes and films made by individuals are not privileged.
- Endorsements of MAR.
- Findings, conclusions, recommendations or deliberations of the MAB.
- Statements made under a promise of confidentiality.
- Privileged information can be found in:
  - Analysis.
  - Findings/Conclusions.
  - Causal Factors.
  - Recommendations.
  - Witness statements.
  - Cockpit voice recordings, but not the transcripts of pertinent information
  - Manufacturer's inputs.
  - Medical Officers Report and analysis.
  - Life sciences report.
  - Board proceedings.

How is Privileged Protected?

- See Enclosure 10 of the SEH Manual.
- Prudence on the part of the MAB.
- Control of MAB paperwork.
- Proper separation of privileged/non privileged information (non privileged on the left side and privileged on the right side of MAR).
- Attitude of MAB members.
- UCMJ Article 92 / Civilian Personnel Regulations.

CHECKLIST # 14--Sharing Mishap Information with Other Investigations.

All other accident investigations are done independently and apart from the safety investigation. Safety investigations conducted per COMDTINST M5100.47 take precedence over all other investigations convened under other Coast Guard directives. In case of conflict between investigations in gaining access to the scene, acquiring and examining evidence, and interviewing witnesses, the safety investigation has priority and shall initially control all witnesses and evidence. Despite this separation, the safety investigation shall provide certain information to the other investigations as soon as possible.

Ensure other investigations are given access to factual information and documents not derived from privileged safety information and witnesses. Factual information includes all non privilege materials, logs, directives, photographs not staged; recordings of air-to-air, air-to-ground, and ground-to-air voice transmissions capturing information at the time of the mishap; flight data recorder tape; and all pre-mishap medical records. It is suggested that where possible, other boards provide the MAB with a list of documents they need.

- Do not release analyses by MAB members, findings, recommendations, comments or references to witness statements.
- MAB can and shall share any and all Non-privileged material. Either make copies or provide originals.
- Document materials and information given to the other investigations.
- Provide list of names/addresses/phone numbers of witnesses (but not statements).

NOTE: Witnesses shall not be interviewed by other investigation boards or CISD staffs until after they have been released by the MAB

- Coroner's reports are releasable, TOX test results and autopsy protocols are not privileged; however, each investigation must request and obtain them independently of the MAB.
- The MAB shall release the wreckage to the legal investigation when finished.
- Do not sanitize copies of film and videotape depicting the mishap sequence. Provide these "as is" to the legal investigator. Include written instructions to send the film or videotape to COMDT (G-WKS-1), when the legal investigation is complete.

NOTE: Do not send videotapes and films not visually depicting the mishap sequence to COMDT (G-WKS-1.) Actual mishap videotapes and films will become part of the original MAR. Include copies of non-official videotapes or films made by individuals (if pertinent to the investigation) and return tapes to original owners.

- Tapes and films of simulated, computer-generated, or reenactments made by or for the MAB are always privileged material.
- Factual photographs where human remains are evident are turned over to the legal investigation in a separate envelope.
- Provide copies of any records or materials required or used in the identification process and copies of requested photographs of the deceased to the mortuary officer. These products may be either AFIP or local flight surgeon generated.
- At no time shall any photographs be released to any party other than the legal investigation board, except in response to a FOIA request.
- Any photograph with arrows, markings or other speculation, leading or deliberative information will be considered privileged and are not releasable.

- POA Support---Provide PAO with a “small bag” of non-privileged, unvarnished facts: Who (unit, NOT individuals), What, Where, When. However, in order for the PAO to do a proper job, the MAB president needs to work with the PAO. The Commanding Officer authorizes the PAO to give all available, releasable information to the news media. When possible, a simple photograph or two of the crash site can be used to “de-fuse” the media frenzy for pictures.

Claims.

Aircraft mishaps, and the loss of life and property accompanying them, present District Legal offices with complex issues of liability and damages.

Sometimes claims officers are unable to supply the MAB with information on the claims implications of a particular mishap because of concern that any further inquiry to the property owner might be considered a solicitation of a claim against the Coast Guard. This concern undoubtedly stemmed from older regulations that seem to prohibit such conduct. However, these regulations are not applicable in those aviation cases where there is no question of liability when our aircraft is resting on someone’s property, and where damage to that property in obvious.

Experience has been that the Government has consistently profited from both financial and public relations viewpoints when obvious legitimate claims have been promptly, fairly, and reasonably adjudicated. A frequently noted side benefit of such a positive approach is the increased cooperation of civilian witnesses and property owners with the various investigations.

Any questions received by the MAB regarding claims against the Coast Guard should be referred to the District. Do not address the merits of any potential claim with anyone.

CHECKLIST # 15 -- Medical Information Releasable To Legal Boards

- Factual, non-privileged information is releasable.
- Privileged information is not releasable.
- Medical information is treated the same as any other information. It is released unless it is privileged or protected by the Privacy Act. It is not privileged merely because it is medical information.

Factual, non-privileged medical information includes the following:

- Toxicological reports.
- Autopsy protocols (but not photographs).
- X-Rays.
- Laboratory reports.
- Medical records except those portions containing statements made pursuant to a promise of confidentiality.
- Physical exams, including those conducted before and after the mishap. Exception: Statements made after a mishap to a member of the MAB during the physical exam pursuant to a promise of confidentiality are privileged.
- Description of injuries.
- Death certificates.

Privileged medical information includes the following:

- Findings, conclusions, opinions, analyses, and recommendations of the MAB Medical Officer. Exception: Opinions and conclusions as to cause of death by persons other than MAB members (coroner, hospital, doctor, etc.
- Statements given to the FS/MO pursuant to promise of confidentiality. Must include a "Witness Statement Promise of Confidentiality Advisory Form". See checklist # 27 and Figure 2-1 of Enclosure 3 of the SEH Manual
- Information protected by the Privacy Act is anything constituting an unreasonable invasion of the right of privacy. Deceased persons are not protected by the Privacy Act, but their next of kin may be.

CHECKLIST # 16 -- Safeguarding Privileged Information Stored In Automated Systems.

- Computers, word processors, electronic mail, etc., may create problems concerning the protection of privileged safety information.
- If privileged information is stored electronically, ensure only persons authorized to have such data are able to gain access. Password protection is NOT adequate if persons outside the safety community have or can obtain the password.
- Examine practices and procedures regarding use of such equipment.
- Remember, letters containing references to the findings, conclusions, or recommendations of safety boards constitute the creation of a privileged document. An example is the preparation of command endorsements. Leaving such privileged documents in a system where unauthorized persons can see them may be subject to the criminal penalties set forth in COMDTINST M5100.47.

Destroy all working copies and documents when the MAB adjourns the final time.

CHECKLIST # 17 Methods of Analysis.

There is no hard and fast method of analysis for mishap investigations. Each MAB must determine a logical method and use what is comfortable. The logic of the analysis and the conclusions reached by the MAB through its analysis are more important than the method used. The analysis should be easy to follow by the those who will read and endorse the report. To assist the MAB several methods are shown.

- The following is an example of findings and determination of cause factors. This method of analysis determines a cause-and-effect relationship between circumstances, actions, or events and the mishap. The MAB then determines which of the findings was a cause in the mishap. The technique is known as sequence of events or the domino sequence.

  FINDINGS:

  Finding 1. Enroute winds were forecast to have a 50-knot headwind component.

  Finding 2. Enroute the pilot encountered 100-knot headwinds.

  Finding 3. The pilot decided to continue his cross-country flight, over flying several weather-free and operational. (CAUSE).

  Finding 4. Five miles short of destination, the aircraft flamed out due to fuel exhaustion.

  Finding 5. The pilot unsuccessfully autorotated.

  Finding 6. The aircraft was destroyed.

  Comment: In this sequence, a weather problem existed, but it did not cause the pilot to continue his flight until flameout.

- This method of analysis uses a list of important areas that are investigated, findings presented for each area, and a determination as to whether the finding is a cause or simply an event or condition leading to the mishap. Make sure the investigation considers all areas listed. (Omit areas not applying and adding those necessary)

Pilot or crew qualifications	Crew rest	Mission
Mission planning	Required publications	Personal equipment
Flight clearance	Crew briefings	Weather
Preflight	Flight	Impact
Survival	Rescue	Violations
Crash response	Engineering personnel	Engineering
Reconstruction	Flight controls and structures	Medical
Power plant, fuel, and oil systems	Communications	Airfield lighting
Navigational aids	Publications and directives	Supervision
Stress/task saturation	Manning	Design deficiencies
Explosives and fire patterns	Electrical, electronics, and instruments	
Airfield facilities	Hydraulics, pneumatics, and air conditioning	

  Technical orders not complied with (pertinent only)

- The National Transportation Safety Board uses an analysis method consisting of the reasoning of the investigator with respect to the meaning of each factual finding relevant to the mishaps, culminating in conclusions substantiating or eliminating the findings effect on the probable causes of the mishap or contributing factors. The steps in this process are:

  - Review and evaluate all the facts and determine their relevancy to the accident.

- Develop various theories based on these facts, explaining the causes of the accident.
- Eliminate theories not supported by evidence.
- Give conclusions relevant to the findings. The conclusions should support the probable cause of the accident and its contributing factors.

- Known precedent. Based on the concept that there are "no new causes," the known precedent application means looking at similar previous mishaps for clues to cause factors. The danger involved in this method is the MAB may jump to conclusions and fail to find the real cause. One rule of mishap analysis is do not come to the investigation with preconceived ideas.

- Codes, Standards, and Regulations. This method looks for codes, standards, and regulations may have been violated and assumes this is the area where cause factors will be found. At best, this method provides information about where problems are and, to a certain extent, their nature. It does little to aid in the preventing of future mishaps.

- The Four M's. This technique is based upon the Venn diagram in which overlapping circles symbolize the relationships between man, machine, media (environment), and management. By systematically considering the man, the machine, the media, and management, most of the considerations in investigation can be covered. The depth of consideration of the items under the four M's is the key to success of this approach.

- Inferential Conclusions. While the emphasis in investigations is to find the facts, it is important to consider information that cannot be fully documented. This passage from facts to probable facts based on the former can be a valuable investigative aid. We must not only be able to gather facts but must also be able to draw inferences and deal with assumptions in order to place our facts in perspective. It is proper to gather negative as well as positive evidence and continually assume something happened interrupting the routine operation. This continual gathering and weighing of factual and non-factual evidence is an inductive process involving continually drawing provisional conclusions. Each is then objectively appraised and tested for validity. Care must be taken that inferences do not, by continual consideration, become accepted as fact. It is important to combine facts, theories, speculation, and conjectures in sequence to form hypotheses for evaluation. They must then be either proven or refuted based on the best available information. An orderly handling of theories through the prove/refute stage is necessary.

- Reenactment. Reenactment is not so much a valid investigative technique as an intuitive reaction. In the most common form the operator involved in a mishap is told to "tell me exactly what happened." In a slightly more sophisticated version the operator is placed at the controls and told to "show me exactly what happened." **Caution**: you run the risk of going to far and creating another mishap, if the reenactment is not carefully controlled. The most sophisticated and certainly safest version of reenactment calls for duplication of the operation in a simulator. Reenactment has limitations, but can be used as an investigative tool. Caution: you run the risk of going to far and creating another mishap, if the reenactment is not carefully controlled.

CHECKLIST # 18 Example Findings, Causes, And Cause Analysis.

Example #1:

- Finding 1. CAUSE. Procedures had not been established by the shop supervisors to ensure adequate FOD inspections were accomplished as part of maintenance procedures.
- Finding 2. CAUSE. At overhaul, a pair of pliers was left inside an aircraft bulkhead in the vicinity of the stabilator.
- Finding 3. During inspection/QA of work performed at overhaul, the pliers were not discovered.
- Finding 4. During a sortie, 45 hours after overhaul, the pliers jammed the stabilator control preventing stabilator movement.
- Finding 5. The aircraft departed controlled flight, and the crew lost control of the aircraft.
- Finding 6. The aircraft was destroyed upon ground impact.

Example #2:

- Finding 1. CAUSE. A nonfrangible runway distance marker was installed in violation of runway design publications by airport owners.
- Finding 2. CAUSE. Supervision had not established procedures to ensure TCTOs are incorporated in all aircraft Engineering records.
- Finding 3. Engineering records did not identify the requirement to change the MLG rod attach pin, and it was continued in service too long.
- Finding 4. The pin failed on takeoff due to excessive wear.
- Finding 5. Due to failure of the pin, the right MLG collapsed.
- Finding 6. Without the right MLG wheel, directional control was lost, and the aircraft departed the runway.
- Finding 7. The aircraft struck a nonfrangible runway distance marker rupturing a fuel cell.
- Finding 8. Fuel from the ruptured fuel cell was ignited, and the aircraft caught fire.
- Finding 9. After the aircraft stopped, the flight crew egressed without injury.
- Finding 10. The aircraft was destroyed by fire.

CHECKLIST # 19--The Mishap Analysis Report - The Hard Part.

See Enclosure 2 of the SEH Manual for Mishap Analysis Report (MAR) format and guidance.

The format of the MAR provides a guide for the deliberations of the MAB. The outline of the report reflects a pattern of deductive reasoning:

- Mishap Information. What the MAB knows (Facts/Evidence).
- Analysis. MAB's reasoning/deliberations.
- Conclusions. MAB's deductions. (Findings and Cause Factors).
- Recommendations. The MAB's recommendations to prevent recurrence. (Solutions and Corrective Actions).

The Investigation and Analysis.

The MAB documents the investigation and analyzes the data and information collected from witness statements, technical evaluations, and other information/evidence. The Mishap Analysis Report (MAR) should describe each area investigated and discussing the significance of the facts and evidence collected. The analysis should consider all facts relevant to the mishap. Evidence having or no significance may be discussed briefly. Areas important in explaining the mishap warrant extensive analysis.

The analysis section presents the MAB's reasoning; it is the MAB's review and evaluation of the evidence and factual information. There should be no new evidence (not already provided as fact or evidence). This section should lay out all the avenues the board took as it analyzed the evidence and causal factors. All causal factors identified must be addressed in this section. The MAB must logically determine the possible causal factors supported by evidence and accepted or reject each.

Conclusions/Findings. (Deductions of the MAB).

A simple listing of the factors considered by the MAB as having contributed to the mishap. It is customary to report on certain features in every mishap, for example:

- The training and experience of the crew.
- The condition or airworthiness of the aircraft.
- The loading of the aircraft.
- Whether there was a pre-mishap failure.
- Isolate each event/condition that sustained the cause-effect sequence leading to the mishap.
- Each event, sustaining the cause and effect sequence, is a finding.
- Each finding must be a clear statement of a single event or condition.
- Number the findings consecutively.
- Each finding must have a logical connection to the other findings.
- Each finding should contain a reasonable measure of probability based on evidence, professional knowledge, good judgment, and be supported in the report.
- Arranged in chronological sequence--when it occurred, not when it was discovered.
    - Start point--answer all the "why" early enough to explain what happened.
    - Stop point--carry through to where all damage/injury has occurred.

Findings are based on evidence, the MAB's professional knowledge, and its best judgment. They are statements of events or conditions leading to the accident. They are arranged in the order they occurred. Even though each finding is an essential step in the mishap sequence, each is not necessarily a cause.

There will be cases where the MAB cannot pinpoint a particular event in a sequence. Even knowing the event, sometimes the MAB cannot find why it happened. Here the MAB must keep in mind that it is not yet dealing with cause factors. Some latitude in stating sequential findings is permissible. List as much of the sequence as you can support. Then state what part of it is undetermined. Where there are supportable alternatives, identify them as such and list them in sequence. The findings should contain a reasonable measure of probability based on evidence, professional knowledge, and good judgment.

Conclusions/Causal Factors -- The Why.

After the MAB has listed its findings, it should choose those findings that are causes. Not every event in a properly developed sequence is cause factor. Some are really effects of results, even though their inclusion in the sequence is material to the mishap. If, for example, an engine flames out because a fuel pump fails, concern is rightfully with the fuel pump. If the fuel pump failed, the engine failure is a normal result and not a casual factor. Findings that sustained the mishap sequence, but were normal to the situation as it developed, are not causes. They are often the unavoidable effects of a proceeding cause.

Causes are those findings, alone or in combination with other causes, resulted in the damage or injury that occurred. A cause is a deficiency, which, if corrected, eliminated, or avoided, could have prevented or mitigated the mishap. A cause may also be an act, an omission, a condition, or a circumstance, and it either starts or sustains the mishap sequence. A cause may be an element of human or mechanical performance.

In most cases, mishaps will have several causes acting in combination to produce damage or injury. The wording of a cause should be a clear and simple statement of a condition or event.

List all factors contributing to the mishap and need to be corrected to keep similar mishaps from occurring. Conclusions under consideration may be evaluated by the question, “if the hazard had been eliminated prior to the mishap, would the mishap been prevented?”

NOTE: Cause factors requiring immediate corrective action beyond the unit level should be addressed to COMDT (G-WKS-1) as soon as possible.

The MAB should consider all possible causal factors of the mishap. In considering all possible causal factors, many will be rejected as too remote. Those remaining as reasonably possible should be thoroughly analyzed. Each of the “possible causal factors” is discussed separately as to its acceptance or rejection. The MAB must logically determine which of the possible causal factors are supported by evidence and which must be rejected for lack of supporting evidence. When completed, there should be no doubt to the reader as to the conclusions reached by the MAB, and how they were reached. In those cases where there is insufficient evidence to support any set of cause factors, the MAB must build a case for the most probable cause scenarios.

Possible causal factors may be classified as follows:

- Human Factors Over 60% of all Coast Guard Class A and B mishaps have involved human factor errors. Description of human factor errors alone is not acceptable. Why the error was made is what is important. Actions of personnel related to possible causal factors should be uncovered and thoroughly analyzed. Such personnel could be aircrew, Engineering, supervisory or other personnel. The Medical Officer will be a key member of the MAB in investigating and analyzing these possible causal factors.
    - Aircrew Factors. Possible aircrew causal factors must be identified by thorough investigation and analysis, whether or not the aircrew survived the mishap. Aviation

experts have identified crew coordination and pilot judgment as major factors in aircraft accidents.

- Engineering, Servicing, and Ground Handling Human Factor Error. Human error on the part of personnel engaged in Engineering, servicing, and ground handling must be considered. These factors must be carefully differentiated from the supervisory factors discussed below.
- Support Personnel Factors. All possible support personnel causal factors must be considered, including traffic control personnel, aircraft handling, servicing, and directing personnel, crash and rescue personnel, and other personnel in a support role.
- Supervisory Factors. Supervisory factors are not restricted to the unit. Supervisory responsibilities at every level within the entire Coast Guard must be considered. Procedures and policies are possible cause factors to be considered. At the unit level, supervisory factors concerning operating and/or engineering personnel should be considered. Some examples of such factors are:
  - Pilot/crew training, qualification, proficiency, and physical well-being.
  - Crew briefing, scheduling standards, adherence to Coast Guard crew rest standards, and supervision of the flight.
  - Engineering personnel training, qualifications, and/or proficiency.

- Material Failures or Malfunctions. All material failures and malfunctions, including those involving support equipment and survival equipment should be thoroughly considered, regardless of whether or not they were due to faulty design, defective manufacture, inadequate Engineering, etc.

- Facilities. Among facilities to be considered are: clearance authority, flight planning, meteorology, landing aids, traffic control equipment, approach and enroute aids to navigation, runway, landing area, approach zone, taxiway, aircraft servicing, handling and directing equipment, crash and rescue equipment, and air sea rescue equipment.

NOTE: Environmental conditions are not cause factors. Environmental conditions are not to be included or discussed as "Possible Cause Factors," "Conclusions," or as "Probable Cause Factors." These items may be included as findings or facts. The deficiencies, errors, material failures/malfunctions, and facilities factors, causing the mishap, damage, and/or injury during the time exposed to adverse environmental conditions should be addressed. These are the areas where recommended corrective actions can possibly be effective in preventing a recurrence of similar mishaps.

Recommendations.

- The most important part of safety investigation.
- Goal is to determine best preventive actions to preclude future mishaps.
- Actions either preventing a similar mishap or reducing its effects.
- A recommendation says something was wrong and must be corrected.
- Each recommendation should be specific and definitive.
- Each recommendation is a single thought/statement--no subgrouping.
- Recommendations must be related to causes of the mishap.
- Do not have to be identified with a specific cause.
- Every cause does not require a recommendation.
- Must be feasible.
- Identify the right action agency. If in doubt--ask.

- "Brief personnel" is not a valid recommendation, nor is "disseminate this information".
- If contingent on incomplete tests or analysis, explain and reference.
- Recommend, "analyze and, if feasible, implement," to ensure results of analysis are acted on.

Recommendations for corrective action eliminate the hazards that were cause factors of the mishap or were cause factors of the damage and injury occurring during the course of the mishap.

Each recommendation should simply state who should do exactly what. No justification or analysis as to what a better world it would be if it were done is needed. Simply who should do what, e.g., Commandant, investigate the redesign the chip light warning/detecting system; or Commanding Officer, include in monthly training plan a one-hour presentation on shipboard operations.

Recommendations that do not serve to eliminate the hazards identified shall not be included.

Recommendations should be self-explanatory, practical and uninhibited.

Supporting evidence/rationale should not be included in the recommendations, because it's already contained/documented in the analyses.

Generally bad "buzz" words: review, comply, insure, reemphasize. These words don't lead to measurable change. Also useless are terms such as all pilots, all aircraft and all squadrons. In addressing everyone, you reach no one.

The board should do its best to make specific and definitive recommendations and, whenever possible, include drafts of proposed changes in the recommendation so all concerned may know exactly what is intended.

Examples of ineffective recommendations:
- All units review SOP.
- All pilots adhere to Dash-One or Air Ops procedures.

Good recommendations:
- G-OCA shall fund research into the development of crashworthy crew seats.
- Mishap Air Station shall submit the following proposed.
- Change the Dash One within 10 calendar days: (draft of Dash One change).

The MAB should resist being too specific. For example, a "Jones-built" part may be the needed replacement for the broken "Smith-built" part. However, the MAB should not recommend the "Jones-built" part. The MAB should only recommend installation of a part with suitable characteristics to solve the problem and possibly refer to the "Jones-built" part as an example.

The MAB should not let presumptions about the budget or bureaucracy influence its recommendations.

In some cases, there will be cause factors identified and no corrective action is deemed necessary and in other cases two recommendations may be made concerning a single cause factor (a short-term fix reducing or eliminating the risk associated with the cause factor until the long-term fix can be incorporated).

Think about closing action. Write the recommendation so that the closing action you have in mind is obvious and sufficient.

"Other Findings of Significance" /Additional Findings.

Findings discovered during the investigation not a cause or result of the mishap shall not be

included in report.

- Covered separately in separate correspondence.
- No prescribed format, content.
- Prerogative of MAB president.
- Sent to convening authority.

During the course of an investigation MAB's frequently detect hazards requiring action but are not causal factors in the investigated mishap. These items did not contribute to the mishap, but may have been important in the rescue and recovery phase, unit training, etc.

These hazards should not be included in the MAR, since their inclusion would serve to cloud the issues pertinent to a specific mishap. The proper way of reporting such hazards not relative to the mishap is via the chain of command.

CHECKLIST # 20 -- Tips For Preparing the Formal MAR.

The MAR is designed for several people to read, and each of those persons should be able to extract certain information quickly from the report. For that reason certain portions of the report use a definite format. This section is to aid the MAB President in constructing the Formal Mishap Analysis Report.

- Deadlines. See Chapter 3 of the SEH Manual.
- Format. See Enclosure 2 of the SEH Manual.
- Privilege. Portions of the Formal Mishap Analysis Report are privileged see Checklist #7 and Enclosure 10 of the SEH Manual.
- The right side of MAR holds the privilege material (enclosures, endorsements, deliberations, etc.) Material on the right side will be used for safety purposes only.
- The left side holds the non privilege material. Information considered factual and available to anyone. COMDT (G-WKS-1) can release this material to the public.
- List the appendices or paragraphs contained on each side of the MAR. This is a list, nothing more.
- Include a copy of the initial preliminary, progress/supplemental and final MAB message in chronological order.
- Photographic coverage. Most mishap photographs, with the exception of those contained in the Medical Officer's Report, Autopsy Report, and staged photographs, are considered factual and nonprivileged. A copy of all nonprivileged photographs, devoid of privilege markings and captions, will be placed on the left side.
- Things to avoid - people's names, call signs, corporate names, and acronyms.
- Beware of (and take care of) "pet" issues, especially if not a factor or tied to the mishap.
- Recommendations not eliminating a cause factor-DO NOT BELONG IN THE MAR!
- Avoid emotional statements and "flag" waving.
- All cause factors should be considered "under human control" and therefore can be eliminated.
- All cause factors should be considered equally responsible for the mishap, do not label as primary, secondary or contributing.
- Sketches and Diagrams. Submit if helpful in conveying circumstances or events difficult to explain in the text of the report. Diagrams showing wreckage distribution, flight path, the mishap aircraft location relative to other aircraft, ground obstacles, runways, taxiways, etc., are helpful.
- Engineering investigation. Engineering investigations, technical, laboratory and contractor reports must contain only factual information. Speculation, opinions and mishap causal factors shall not be included in these evaluations. If the MAB desires information demanding speculation or the opinion of an expert, and the MAB provided that expert a grant of confidentiality in providing such speculation or opinion, the information provided shall be separated from factual evidence and submitted as a privileged witness statement.
- Flight Data Recorder and Voice Cockpit Recorder. See Checklist #28.

- The MAB's Formal Mishap Analysis Report is privileged information and shall be used as the cover for the enclosures.
- Medical Officer's Report. See Enclosure 3 of the SEH Manual.
  - Laboratory reports (tissue, blood analysis, etc.).
  - Autopsy Reports, DO NOT included in the MAR. Autopsy reports should be submitted separate from the MAR and should NOT be included in any copies of the MAR. Autopsy reports shall be properly marked and sealed in a separate envelope very plainly marked "PASS DIRECTLY TO COMDT (G-WKH-1)."
  - Autopsy photographs and other photographs, helpful in understanding the Medical Officer's Report, shall be shall be submitted ONLY with the original MAR. Such photos shall be properly marked and sealed in a separate envelope very plainly marked "PASS DIRECTLY TO COMDT (G-WKH-1)."
  - X-rays. DO NOT include in the MAR, a summary statement of the x-rays is sufficient.
  - Reproductions of other material considered pertinent and relevant to the mishap.
  - Psychological questionnaires, aero medical conclusions from psycho-sociological interviews, analysis of psychopathological findings and other detailed discussion and analysis of potentially sensitive information dealing with the personal life of mishap crewmembers shall be submitted ONLY with the original MAR. Such information shall be properly marked and sealed in a separate envelope very plainly marked "PASS DIRECTLY TO COMDT (G-WKH-1)".
- Witness statements solicited under a promise of confidentiality. Attach Figure 2-1 of Enclosure 2 of the SEH Manual to the statement. Make copies and have the witnesses read and sign the forms.
- Witness statements not provided under the promise of confidentiality, much have Figure 2-1 of Enclosure 2 of the SEH Manual attached to the statement. Make copies and have the witnesses read and sign the forms.
- Submit witness statements if the content is pertinent to the mishap investigation and when they help in understanding the report. Telephone conversations with people to gather information shall be reduced to writing in the form of a "results of interview" and submitted as witness statements.
- MAB Developed Information. Information the MAB directly calculated, or specifically development during its deliberations, and the disclosure of such information would reveal the MAB's deliberative process, that information shall be included with the other privilege information.
- Appendices. Add as many appendices as needed to support the investigation and analysis. List in the order referred to in the MAR.
- The submission of appendices will decrease, in most cases, the amount of information the MAB needs to include in the Mishap Analysis Report. Who did the MAB get information from? What did the MAB look at for real evidence? Photographs, sketches, diagrams, records (aircrew/aircraft data), technical assistance (Engineering Investigation Reports, Armed Forces Institute of Pathology lab reports), tapes (radio, plat, radar, flight recorders).
- In almost all cases, if the enclosure or information is not considered pertinent to the mishap, DO NOT include it in the MAR.
- The COMDT (G-WKS-1) is the only releasing authority for any material contained in the

MAR, left side or right side.

- To avoid any association with disciplinary action, the MAR shall not mention or contain parts of any Administration Investigation, Aviator Evaluation Board reports or other disciplinary reports associated with the mishap.
- Nor may an MAR or any part of one, be made a part of a any other investigation associated with the mishap.
- The exercise of command influence to edit, modify or in any way censor the content of an MAR is contrary to the spirit of the USCG Aviation Safety Program and is prohibited.

CHECKLIST # 21 -- Questions And Answers For MAB Members.

1. Suppose I am investigating an aircraft mishap under COMDTINST M5100.47 and the pilot (blue suiter) or the mechanic (Coast Guard civilian) refuses to talk to the MAB under any circumstances. What do I do?

ANSWER: You can order the Coast Guard active duty member to talk or face UCMJ charges for disobedience of a lawful order. The civilian cannot be forced to comply with such an order.

2. I was involved in a Coast Guard aircraft mishap. A lawyer wants to talk to me. What do I tell the lawyer?

ANSWER: Do not talk to the lawyer. Refer the lawyer to the COMDT (G-L). Immediately contact your local COMDT (G-L) and inform the lawyer of your relationship to the mishap and that you were contacted by an attorney. Never talk to an attorney without a Coast Guard lawyer present. This does not mean you cannot talk to a lawyer if you were injured in a mishap and are considering legal action against the manufacturer of the equipment. However, you may not reveal privileged information to your attorney. To do so is punishable under the Uniform Code of Military Justice.

3. I investigated a Coast Guard aviation mishap. A lawyer wants to talk to me. What do I tell the lawyer?

ANSWER: Same as number 2.

3. What is a deposition?

ANSWER: It is the taking of testimony under oath. It is done in an office or conference room. Counsel for all the parties are present as is a court reporter. The judge is not present. Everything is taken down verbatim. The person being deposed is asked questions by counsel for each of the parties.

4. If I am subpoenaed to be deposed as a result of a mishap I investigated, what do I do? Will the Coast Guard represent me at the deposition?

ANSWER: Take the subpoena to the COMDT (G-L). If you are required to appear, a Coast Guard attorney will accompany you. It is possible the subpoena is invalid; therefore, you should have it reviewed by the base legal office. DO NOT ATTEND A DEPOSITION WITHOUT COAST GUARD COUNSEL.

5. What should I do with non-privileged working papers or photographs after the mishap report has been prepared?

ANSWER: Destroy all working documents and notes revealing the thoughts and deliberations of the MAB. Destroy any documents, photographs, drawing or other documents not used in the final report

7. I am on the MAB, and the AIM is asking for the results of the TOX testing. Can I give it to them?

ANSWER: It is factual information. However, you should refer them to the same source you obtained the information.

8. I am on the MAB, can I give the AIM Investigator a description of the crew's injuries? The cause of death?

ANSWER: You may release the description of the injuries but may not be able to release the

cause of death. The description of injuries is factual information and may be given to the AIM Investigator. The cause of death, if it is an opinion of a member of the MAB, should not be released. If an autopsy protocol is available, it may be released to the AIM Investigator as it is not privileged and will contain the cause of death. It is not released outside the Department of Homeland Security except to the next of kin upon their request or upon court order. This practice is followed in respect to the survivors. If the only available statement regarding the cause of death is the opinion and conclusion of the MAB, it is privileged and the AIM Investigator should obtain their own medical expert for this opinion. All requests for the autopsy protocol by persons other than the Admin Investigation should be referred to COMDT (G-WKS/WKH).

9. About a year and a half ago, I was a witness to a mishap and gave a statement to the MAB, and now I have to go to court. I want to see a copy of my statement, so I can refresh my memory on what I said. May I do so?

ANSWER: No. The statement is privileged and is to be used for mishap prevention purposes only. Testimony in a judicial proceeding does not qualify as mishap prevention.

10. I am president of an MAB. An AR&SC technical specialist who wrote a tear down analysis report wants his report classifies as privilege because much of his analysis is speculation. May I honor his request?

ANSWER: No. However, there is a need occasionally for a technical analysis to be written on the cause of a mishap or an elaboration as to what is strong or weak in the analysis. This information should not be included in the formal evaluation of material. Rather, it should be drafted separately and provided to the MAB under a separate cover and should not be called a technical or engineering evaluation. By the same token, technical or engineering evaluations should not be renamed in an attempt to make them qualify as a privileged report.

11. I am the MAB president. I requested technical assistance from the aircraft manufacturer. They sent a representative who assisted in the investigation and wrote a report. He has informed me he discovered facts during his investigation showing the manufacturer is responsible for the mishap. Before he will give me the report, he wants assurance these facts will not be released outside the Coast Guard safety channels. May I give him this assurance?

ANSWER: Yes. The case of Badhwar et al v. US decided Sep 87 by the Circuit Court of Appeals in Washington, DC, held that the factual portions of the contractor's report, as well as the analysis, is exempt from disclosure under the Freedom of Information Act.

12. I am the MAB president. I am investigating a mishap involving a fatality or serious personal injury. I discover the only technical representative available to analyze possible hardware failures is a representative of the manufacturer. What do I do?

ANSWER: You need to have a CG member with him at all times, this ensures protection of the manufacture's representative. Do not allow the manufacturer's representative to remove parts from the mishap site or conduct an analysis that will alter their condition until a qualified Coast Guard representative is present. We cannot guarantee the contractor that we can protect the confidentiality of the report without a valid, releasable, technical report conducted by an qualified AR&SC or Coast Guard representative. If the only viable report is the one done by the contractor, the courts will most probably order it released. If that happens, we will lose the cooperation of contractors at mishap investigations. Always insist an AR&SC representative be present at the outset of any mishap investigation, especially if litigation is likely.

REFER LEGAL QUESTIONS TO COMDT (G-WKS/G-L)

Checklist # 22--NTSB and FAA.

The National Transportation Safety Board.

The NTSB is an independent agency with statutory authority to investigate air, rail, highway, pipeline and maritime accidents, and to propose corrective action. The NTSB's charter in aviation applies to any aircraft accident (major damage or severe injury) in U.S. jurisdiction, but in practice is reserved to civil registry aircraft operating under FARs. Accidents involving only military aircraft (operated by the federal government) are investigated by the respective agencies.

The Federal Aviation Administration.

The FAA, under the Department of Transportation, controls the national airspace system, certificates aircraft and licenses airmen. The FAA has no investigative authority in its own right, but is likely to be involved in military mishaps because it provided services or simply because it had radar coverage of the mishap locale. An agreement between NTSB and FAA permits NTSB to delegate certain mishaps to the FAA for investigation. NTSB occasionally does so where there is possible risk to flyers and passengers in general and commercial aviation.

Civil and Military Aviation Mishap.

For a mishap involving civil and military aircraft, it is conceivable there could be three concurrent investigations: NTSB, Commandant's MAB and AIM Manual. The NTSB investigation would have precedence over the military safety investigation for access to evidence. Procedures for such an investigation are described in COMDTINST M5100.47. COMDT (G-WKS-1) will coordinate MAB efforts in accordance with existing Memorandums of Agreement between the USCG, NTSB and the FAA governing such investigations.

NTSB/FAA Involvement In A Mishap.

By law, military authorities must provide for participation by the Secretary of Transportation in a military mishap investigation that may involve a duty of the Secretary. In practice this can mean FAA attendance at a mishap investigation involving an FAA service or function. The NTSB will have an interest if the circumstances could apply to civil aviation. Participation may be extended to the NTSB whenever military authority considers it could contribute to aviation safety.

In those Coast Guard aircraft mishap with FAA or NTSB involvement the Coast Guard retains jurisdiction. Circumstances in which NTSB or FAA participation may be appropriate are:

- Mishap involving a military aircraft, component or equipment with civilian equivalent, or an operation applicable in civil aviation.
- An FAA function is involved. Consider the FAA involved if any of the following apply:
  - Performance of an FAA employee or designee.
  - FAA certification of a civilian crew member.
  - FAA design or airworthiness certification.
  - Navigation or airport facility established, operated or maintained by FAA or another agency for FAA.
  - FAA rule, regulation or order applicable to airspace use.
  - FAA air traffic service (clearance, instruction, advisory); air-ground or point-to-point message transmission; weather observations and reports; Notices to Airmen; airport advisory and flight service.
  - FAA approach control function delegated to a military facility.

- Operation under an FAA waiver or exemption.
- FAA regulation and nonmilitary publications.
- FAA standards for obstruction clearance, flight inspection, lighting or markings at airports and along airways.

In most mishaps, FAA is simply a resource for information. If the aircraft was or could have been visible to radar FAA is a potential source of information regardless of filing, flight rules or squawk. NAVAID status and area weather are also available. If the crew attempted contact or was handled by FAA, additional information is possible: taped radio/telephone communication, pilot reports, and more.

You may want an interview or statement from the controller. The involved ATC facility can provide radar and aural tapes, their own set of standard operating procedures, and the like. This material may all be useful to your investigation, but the logistics of obtaining it can be cumbersome. Assistance in obtaining such evidence can be provided by COMDT (G-WKS-1). But YOU must get the ball rolling.

Make timely requests, recording media are recycled after 15 days and temporary notes (aircraft routing slips, PIREPs) discarded.

FAA personnel may provide witness statements and interviews, although there is considerable formality to such requests.

The following is a list of items obtainable from FAA:

- Taped communications of:
  - Airman-to-FSS telephone weather brief and filing radio: ATIS, clearance, ground, tower, approach, departure, enroute.
  - Internal/external comm for controllers/supervisors.
- Facility status (runways, taxiways, navaids).
- NOTAMs.
- Statements by controllers/supervisors on duty during mishap.
- Weather observations (hourly/special).
- Replay radar tape (visual).
- Tabulation of radar file (on paper) for analysis/simulation.
- Depiction of control sector (airspace) boundaries/altitudes.

A request for the above information does not require FAA participation. However, if the MAB is thinking an FAA service or function may be among the possible causes, the President should make appropriate notifications to initiate FAA participation.

In practice NTSB/FAA participation differs little from an MAB’s use of engineers, technicians or manufacturers' representatives. Personnel other than those appointed to the MAB are not included in the MAB's interviews with witnesses, deliberations on privileged information, or creation of the investigation report.

The concept of privileged information is not practiced in NTSB investigations, nor in FAA proceedings. However, when personnel of those agencies are admitted to a military safety investigation, they and their agencies are bound to observe and comply with confidentiality of information obtained under promise of nondisclosure.

In view of the above, NTSB/FAA participation in a mishap investigation under military authority is construed as attendance and active assistance in any portion of the investigation is permitted, except those where the MAB obtains, analyzes or reports privileged information.

Interagency Notification. At the earliest occasion the MAB entertains an FAA function as possible cause, the President should notify COMDT (G-WKS-1). The Aviation Safety Division will determine whether NTSB may have interest in the investigation.

The Aviation Safety Division will provide the NTSB and the FAA opportunity to participate according to each agency's involvement or interest. The agencies will acknowledge notification, indicate their intentions (decline or participate) and, if appropriate, identify personnel assigned to the investigation.

Not all NTSB and FAA personnel hold security clearances. In a mishap involving classified matters, military authorities must identify an access level so NTSB and FAA headquarters may assign personnel with appropriate clearance. Official notification from the NTSB and the FAA of agency personnel clearances and presentation of agency credentials will constitute evidence of clearance.

If not previously initiated, supplemental message from the MAB President should include as INFO addees the NTSB, FAA headquarters.

The President of an MAB with FAA or NTSB participants will supervise and direct their activities during the course of the investigation.

NTSB and FAA representatives may be expected to support the MAB with access to agency personnel for interviews, information, and records. They may be expected to pass to their agencies information applying to civil aviation.

An FAA participant in a military safety investigation may not take part in an FAA enforcement action in connection with the mishap. This does not preclude the agency from taking action on violations of Federal Aviation Regulations: other agency personnel would be appointed to gather evidence for such action.

Privileged documents (witness statements, records of MAB analysis, conclusions or recommendations) may not be provided to NTSB or FAA participants. Copies of nonprivileged documents used by the MAB may be provided to NTSB and FAA participants as the President sees fit.

An MAR may be released only as prescribed by COMDT (G-WKS and G-LRA). NTSB OR FAA personnel who assist an MAB are not entitled to a copy of the MAR, nor should the MAB include their agencies as addressees.

If during an investigation, the MAB identifies a hazard, requiring immediate action on the part of civil aviation, the MAB President shall contact COMDT (G-WKS-1) immediately for proper handling.

A conclusion in an MAR attributing cause to another agency or recommendation of corrective action by another agency may be released externally only by Commandant.

CHECKLIST # 23 Mishap Investigation Tips.

Most of the clues to the cause of the mishap are available on the first day and deteriorate with time. Do not delay the start of an investigation.

The MAB President and the rest of the board members may not arrive for a day to two. The unit should continue with the unit pre-mishap plan until the MAB arrives.

Avoid taking a scrap of information and attaching a theory to it. Learn as much as possible from the wreckage at the crash site before moving anything.

Don't rely on your memory. Make notes, take photographs, and use a tape recorder.

Don't take shortcuts; you may unknowingly destroy clues.

One of the most common faults of accident investigators is "tunnel vision" or jumping to conclusions at an early stage in the investigation. Hence, the search for clues and evidence to support a preconceived assumption overlooks other evidence that may lead in a different direction. All investigators must be on their guard for this can unnoticeably slip into the investigative proceedings.

Maintain an open mind.

Don't focus on just one cause; a mishap is the culmination of a number of apparently unrelated events lining up to create an environment for the mishap to occur.

Component or structural failures:

- Inadequate design strength.
- Excessive loading.
- Deterioration of static strength.
- Fatigue or corrosion.

The direction of flight is often indicated most clearly by the direction of the teardrop fuel splash and fire pattern.

Do not wash, clean or brush off dirty items before examination.

Do not touch settings on control dials, switches or anything that can be changed. Record and photograph them.

You can never take too many pictures.

Nuts and fittings can come loose on impact or after a fire due to the heat and deterioration of seating.

The location of witnesses is significant. The exact spot a witness makes an observation may explain differences from the accounts of other witnesses in the crash vicinity.

- A witness downwind of a mishap may often hear sounds not audible to the upwind observer.
- Sound is deflected by walls or buildings and may cause the witness to erroneously report direction, sound origin, or dynamic level.
- Background noise level at the point of observation may account for a witness missing significant sounds noted by other observers.
- The witness looking toward the sun sees only a silhouette, while the witness whose back is toward the sun may note color and other details.

Peers and the power of suggestion may influence a witness located in a group.

Witnesses often confuse the sensory inputs of seeing the fireball of the crash and hearing the explosion of the crash. This confusion may make them think there was an inflight fire when there was not.

Another common witness failing is "transposition." The witness reports all the facts, but places them out of sequence with the actual occurrence.

Angle of impact may be determined by the flight path through obstacles prior to the point of ground contact or by geometry of the crater. Do not confuse this angle with the aircraft attitude at impact.

Guidelines to help avoid problems typical of committees such as the MAB:

- Encourage "brainstorming" to generate as many ideas as possible.
- No new idea should be considered too far out.
- No idea is to be considered a member's personal property. Using or building upon other's ideas is to be supported.
- There should be only constructive criticism. Have an MAB member play the role of "devil's advocate."

Hangar layout of wreckage can be essential to a thorough investigation.

Do not store the wreckage at the mishap unit, if at all possible.

If molten metal deposits are found on the hot section components, a minimum operating temperature can be determined based on the melting point of the metal deposits.

The heaviest items (e.g., generators, batteries, engines, etc.) often travel the greatest distances and will indicate the direction of flight.

Mishap factors are like dominoes. Your goal is to identify all the dominoes and make recommendations to prevent the cascade of mishap events from recurring.

Never put broken parts back together!

Don't forget the rest of the unit, they can be helpful, security, cleanup, moving wreckage, etc.

Don't hesitate to call the Aviation Safety Division with questions.

Don't give up.

There will always be hazards around mishap sites. They will not always be obvious and can sneak up and bite you when you're least prepared.

Beware of transmitting information on cell phones and radios at mishap scene.

Don't wait on paper orders. You will get your TONO and you will get paid. Right now time is important not paperwork. You can travel without a TONO. Contact G-WKS-1 for assistance.

Flight Restrictions Following Aircraft Mishaps.

- Class A and B Mishaps. Aircrews shall be temporarily grounded following any aircraft mishap in which the aircraft sustained Class A or Class B damage or a crewmember was seriously injured. Flight personnel must be evaluated by a flight surgeon and found physically qualified and aeronautically adaptable for aviation duties prior to resuming flight status. Waiver of this requirement may only be obtained from COMDT (G-OCA).
- Critical Incident Stress Management intervention may be warranted and is at the discretion of the Commanding Officer.

- Class C, D and E Mishaps. Temporary grounding of aircrews following Class C, D or E mishaps may be advisable in certain situations and shall be at the discretion of the Commanding Officer or his designated representative.

DIRT, DUST AND AIRPLANE PIECES. There's nothing like being immersed in a cloud of charred aircraft remains. More so if composite fibers are part of the deal. Be smart around aircraft wreckage. Long sleeve shirts, surgical masks, respirators, and goggles will prevent particles in the eyes, particles in the lungs, and annoying fibers on the back of your neck. See The Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation. (http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm.

A little trick for those who must work with charred composites: talcum powder and a nylon stocking will remove fibers. Just sprinkle the powder on the affected skin and rub gently with the nylon until the fiber is snagged. It's as simple as that, but it needn't get that far. A good preventative measure against fiber annoyance is a wet rag around the neck. The benefits of this technique will be immediately obvious.

THINGS THAT GO BANG. Cartridge-actuated devices (CADs), tires, and fire and oxygen bottles are major concerns, though unexpended ordnance normally constitutes an investigator's first thought. Explosive ordnance disposal (EOD) personnel must make the wreckage safe before anyone starts to sift. EOD targets should include pressurized (fire extinguisher or oxygen) bottles and hydraulic reservoirs. All potential boom-booms should be considered unstable and in need of expert attention

STUFF THAT GOES "WOOSH". We're talking about fuel and oils, and just because you don't smell them, don't think they're not around. (There was no fuel spilled when the T-34C impacted the ground or while the aircraft was in the inverted position. The fuel cell could not be de-fueled. When the aircraft was righted, nearly 30 gallons of fuel spilled out of a tear.)

Use absorbent pads as soon as possible to soak up what you can. The area may be extremely volatile with fumes and standing fuel. Forget most everything else for the moment; the ill effects of smoking, torches, or spark producing saws should have your immediate attention

Be assured that all appropriate hazardous material (HAZMAT) agencies will visit your site to assess environmental damage and suggest cleanup methods. Value and use their expertise.

LOCATION, LOCATION, LOCATION. There's no good location for a mishap, but some are worse than others. Mountains, bogs and deserts have their own distinctive hazards. Weather, terrain and accessibility, and indigenous critters are but a few. Dress for the location and the job. Tennis shoes and sweat pants won't work. Keep in mind a site's remoteness will increase the time required to transport injured site workers to a medical facility, so outfit your working party for the environment.

CHECKLIST # 24--What Should I put in my Crash Kit?

The short answer is: anything you want…The long answer continues: …to buy, to pack, to store (in your spaces), and to carry.

The purpose of a crash kit is to provide an initial load of equipment for workers to isolate the crash site and to exploit the wreckage where it is found. A prepackaged crash kit is a boon when you need it, but a storage problem when not in use. Let the following be your guide.

At the site, work around the wreckage will be extensive: photography, documenting ground scars, plotting parts' locations, drawing fluid samples, identifying and labeling. Equip yourself for these tasks.

Work on the wreckage will be minimal: detailed component disassembly is not performed in the wild, so there is no need to equip for it on Day One. Rudimentary tools (hammer, cable cutter, hacksaw) and a basic toolbox (all checked out of tool room) will suffice until the MAB makes specific plans for further activity like selected component removal or wreckage movement.

Knowing what you are likely to want at the site and stockpiling only what is (1) needed for the first day onsite or (2) hard to obtain from your usual supply outlets on short notice. For items in common use around an air station, you can forego duplications and concentrate on acquiring those, which cannot be snagged from the supply closet, pre-expended bin or tool room. IF you build a kit in this fashion, make an auxiliary list of (wanted but omitted) items to fetch (and where they are) on your way out the door, or you will have outfoxed yourself.

If after brainstorming the kit's contents, you find the list will occupy more than one cruise box, segregate contents according to the context for their use. For example, most mishaps involve crash-damage, but not all involve fire. Consequently, it is possible to separately box fire-related items (bunny suits, respirators, floor wax, and applicator) and they can be left behind when not needed. Likewise, if an aircraft goes down in the water, your accompaniment of salvage will not require a magnetic compass, surveyor's flags or boundary tape.

Caution against shooting oneself in the foot---this packing method depends on the box(es) being labeled with an accurate content inventory.

Corollary to Murphy's Law: some crash sites will be accessible only by extraordinary means (air insert or long march). Crash kit contents may have to be broken out of cruise boxes and delivered to the site in your backpack.

No rule says you must endure a weeklong field investigation with only what you brought on the first launch to the site. Use radio or portable phone to communicate your additional needs to the rear, or bring tomorrow what you missed today.

Coloring Book. Several aircraft manufacturers have made up an investigation aid called a 'coloring book,' a collection of system diagrams and an outline for taking notes. If not, make your own from flight manuals, Dash-One diagrams, etc.---or be prepared to take a library of Engineering manuals to the dirt. Invariably, the name-that-part exercise accompanying every crash will exceed your systems knowledge. Whether factory-made or homegrown, duplicate and insert that portion of the Crash & Salvage Operations Manual (NAVAIR 00-80R-20) describing the specialty hardware and method to recover your aircraft on rough terrain.

Game Plan. Your unit pre-mishap plan probably divides various tasks among MAB members in checklist fashion, and should list essential points of contact. In the scramble to the center of activity, members may neglect to bring their respective lists with them. Have a copy in the crash

box.

Gloves, Goggles and Dust Masks. No maybes about it, you will need gloves; goggles and dust masks. Gloves should be of two types: leather (for rough materials) and latex/vinyl (for wet materials). Some surgical gloves are too fragile for crash site work; check your local supply, medical unit or (commercial) industrial supply house for some that are slightly thicker, preferably with textured gripping surface. Leather gloves come in more than one size, so get some of each size. Otherwise people with medium- or small-sized hands will be tempted to remove ill-fitted gloves and work barehanded---a sure way to encourage crash-site injuries.

Your unit's kit will be a reflection of your aircraft, your operating environment and your assessment of needs. Be ready for the next deployment: a shared kit at AIRSTA Home base will provide small comfort if you're 1000 miles from the storage locker.

You may want to make a list of items to "fetch" and assign someone the responsibility in you pre-mishap plan to track these items down. These are items easily found at a unit, but do not necessarily need to be kept in your go-bags. Or there maybe items with expirations dates.

You should have an inventory list of items in the mishap kits as well as an inventory list to check items in and out of your kits.

With the above discussion in mind, consider the following as a thought-stimulator, rather than an all-inclusive list.

- Cell phone or two-way radio to base/fire department/sheriff (lifeline for medevac).
- Camera.
  - Single lens reflex: film & batteries.
  - Digital: spare floppies (or memory cards) & batteries.
  - Last-ditch: disposable 35mm.
- Film, color and black and white.
- Tape recorder (small): 3-4 blank tapes & batteries.
- GPS: to plot wreckage, obtain headings and spot elevation.
- Map: Largest scale is best. Scale 1:50,000 is marginal; 1:25,000 or lower is better. (These are infantry scales.).
- Magnifying glass.
- Magnetic compass.
- Pocket knife.
- Tape measure: 50' or 100' will do.
- Ruler: one (12" or 18") will do.
- First-aid kit: with tweezers.
- Latex/vinyl gloves: 3-4 dozen.
- Leather gloves: 2-3 dozen in mixed sizes.
- Dust masks: 2-3 dozen.
- Goggles or safety glasses: 1-2 dozen.
- Ear plugs.
- Hardhat.
- If burned composites are present:
  - Liquid floor wax as fixative (cut 10:1 with water).
  - Tank sprayer to apply diluted fixative.
  - Respirators (probably individually issue to qualified reclamation personnel).
  - Tyvec suits & booties.

- Tie-on tags for parts labeling: 100+.
- Sticky notes.
- Surveyor flags for marking parts' locations: 100+.
- Surveyor tape in neon colors: 2-4 rolls.
- Boundary tape to mark site perimeter (yellow-and-black, 'Do Not Cross')---500 ft.
- 'Restricted Access' signs for site security.
- ID cards for authorized personnel to enter site.
- Sunscreen.
- Bug repellant.
- Schrader valve tool for tire and accumulator deflation.
- Graph paper.
- Clipboard.
- Pens/pencils, indelible markers (various colors), chalk, spray paint (neon)---one can.
- Grease pencils.
- 3 X 5 index cards.
- Pocketsize notebooks, "write in the rain" notebooks.
- Calculator.
- Plastic resealable bags – assorted sizes.
- Fluid sample bottles: Fuel---quart bottles. Oil/hydraulic---2-4 ounce bottles (pill bottles). Have enough for each fuel tank and the fuel control on each engine, and each oil and hydraulic system. Label them now: labels won't adhere or take ink after they're wetted.
- Toilet paper.
- Paper towels or canopy wipes.
- Tool box: Drawn from squadron tool room.
- Additional tools: hacksaw, hammer, cable cutter (not bolt cutter). Mark and account for loose tools taken to the site.
- String or parachute chord: small roll.
- Plumb line (string with weight attached).
- Duct tape: one roll.
- Static-free bags: 1-2 dozen.
- Flashlight: with spare batteries.
- Chalk.
- Spare batteries for all equipment.
- Witness statement forms, postage-paid return envelopes.
- Bio-Hazard bags.
- Food & water for 24 hours on-site.

CHECKLIST # 25--Telephone Numbers and Websites

FLAG PLOT	1-800-267-2100
USCG HEADQUARTERS 1-800 NUMBER	800-842-8740 ext (7xxxx) (Last 4-digits of Headquarters number)
COMDT(G-WKS) General Number	202-267-1883
Aviation Safety COMDT(G-WKS-1)	202-267-2971/2966/2972/1884
Operational Medicine COMDT(G-WKH)	202-267-0528/2073/
COMDT(G-SEA)	202-267-0796/0180/0187
COMDT(G-OCA)	202-267-0952/1561/2871
Decedent Affairs COMDT(G-WPM)	202-267-2251
Public Affairs COOMANDANT (G-CP)	202-267-1587
Work Life COMDT(G-WKW)	1-800-827-4957
U.S. Air Force Safety Center (AFB Kirkland,)	505-846-0644 www.afsafety.af.mil
U.S. Army Safety Center (FT Rucker, AL)	334-255-9552/2029 www.safety.army.mil
U.S. Navy Safety Center (Norfolk, VA) (24 Hours)	757-444-3520 (follow instructions) www.safetycenter.navy.mil
U.S. Marine Corp Safety Center (Washington, DC)	703-614-1202/1077/2423 www.hqmc.usmc.mil/safety.nsf
FAA Operations Center (24 Hours)	1-800-992-7433/202-267-3333
NTSB Communications Center	202-314-6000
NTSB Electronic Phone Book	http://www.ntsb.gov/abt_ntsb/phonedir.pdf
Civil Aeromedical Institute (CAMI)	405-950-2886 http://www.cami.jccbi.gov/
Armed Forced Institute of Pathology (AFIP)	202-782-2100 www.afip.org/index.html
Toxicology	301-319-0100/800-944-7912
Office of Armed Forces Medical Examiner	800-944-7912
National Response Center (HAZMAT only)	800-424-8802 (24 Hour)
Environmental Protection Agency (EPA)	See HOTLINE website http://www.epa.gov/epahome/hotline.htm
Occupational Safety & Health Administration (OSHA)	http://osha.gov/ http://osha.gov/html/oshdir.html
EOD East Coast Watch Center	757-462-8452
EOD West Coast Watch Center	619-437-0720

Naval Operational Medical Institute (NOMI) 805-452-4554

See NOMI website for Naval Aerospace Medical listings
http://www.nomi.med.navy.mil/Text/directorates/default.htm

Naval Aerospace Medical Institute (NAMI) 850-452-2741

Important Local Telephone Numbers

Position	Name	Telephone Number	Pager or Cell
CO			
XO			
Duty Officer			
President, Unit Permanent Mishap Board			
FSO			
AST Shop			
Engineering, Unit Permanent Mishap Board			
Operations, Unit Permanent Mishap Board			
Other Member, Unit Permanent Mishap Board			
Other Member, Unit Permanent Mishap Board			
Other Member, Unit Permanent Mishap Board			
Other Member, Unit Permanent Mishap Board			
Flight Surgeon/Medical Officer			
ATC/TOWER			
Photo lab			
Civilian Coroner			
Clinic			
Hospital			
Emergency Room			
SAR			
Medevac			
Ambulance			
Public Works			
Security			
MAB Working Room			
MAB Cell Phone or Pager			
MAB Cell Phone or Pager			
MAB Cell Phone or Pager			
MAB Cell Phone or Pager			
MAB Hotel			
ARSC POC			
ARSC POC			
ARSC POC			
Legal/Admin Investigator			

CHECKLIST # 26—Message to MAB Presidents

TBD

CHECKLIST # 27--Witness Statement Promise of Confidentiality Advisory Form

Figure 2-1 Enclosure 2 of the Safety And Environmental Health Manual.

NOTE: This statement is for all mishaps. Every witness granted confidentiality shall read and sign. Copies of form should be made on 8-1/2 by 11-inch paper and attached to each witness statement for inclusion in safety reports.

Witness Statement Promise of Confidentiality Advisory Form

"You are hereby advised, as a witness to this safety investigation, your statement will be used solely for mishap prevention purposes. Your statement will not be made available to anyone other than United States Coast Guard officials responsible for the assembly and review of this safety investigation report."

I, (Name)_____,
(Rank/Rate/Grade)_____, (Organization)_____, have been advised by
(Name)_____ of the following:

- This investigation is being conducted under the provisions the Safety And Environmental Health Manual (COMDTINST M5100.47 (series)) solely for mishap prevention within the United States Coast Guard to determine all factors relating to the mishap and to prevent recurrence.
- I have been promised confidentiality concerning this statement. If I elect to have my statement treated as confidential, this means it will not be distributed outside the Coast Guard nor used within the Coast Guard as evidence to support any disciplinary action or adverse administrative action including, but not limited to line-of-duty status or pecuniary liability, or separation from the Coast Guard.
- Non-confidential witness statements may be released to the public pursuant to a Freedom of Information Act request. Only statements given under a promise of confidentiality are protected from release outside safety channels.
- Whether or not a statement is considered confidential, the chain of command will review the final mishap report, but the chain of command may only use the materials for safety and mishap prevention purposes.

I understand I am being interviewed as a witness in a mishap investigation and I acknowledge that a promise of confidentiality has been extended to me. I further understand the effect of this promise. I (do) (do not) desire my statement to be treated as confidential.

_____(Signature)_____(Date)

(To be completed after the witness has given a statement)

I (still desire) (do not desire) to have my statement to remain confidential.

_____(Signature)_____(Date)

CHECKLIST # 28 – Mishap Cockpit Voice and Flight Data Recorders

See Checklist # 3, Chapter 2 and Enclosure 10 of the SEH Manual.

G-WKS-1 coordinates analysis and animation of flight data and voice recorders.

Data retrieved from recording devices is factual information when presented in tabular or graph format (aircraft position information, engine stats, flight info, time data, heading information, etc.). The MAB may share the raw data of any recording device successfully downloaded with other investigative Boards.

Any animation that is produced purely from raw data is considered non-privileged. However, if the animation uses speculation or information derived from privilege safety material (i.e. crew statements), it becomes privileged.

If the animation also includes voice recordings, it may be protected by the Privacy Act. The sound of person's voice can legally be safeguarded.

The Privacy act safeguards the sound of the travail of a dying crewmember. This applies to the privacy of next of kin, a persons dying words are afforded protection.

Transcripts of the **relevant portions** of the cockpit voice recorder are considered non-privilege and can be released (emphasize on the relevant portions). Portions or comments of the recording not related to the mishap sequence of events (i.e. comments about the xo or the co daughter) were not be released due to the lack of relevant, nor would they be transcribed. The actual cockpit voice recordings and the names of the individuals whose voices are captured may be safeguarded due to privacy act concerns and are not released.

Inappropriate use of the voice portions of cockpit voice and flight data recorder downloads will be handled in accordance with Article 92 of the Uniform Code of Military Justice.

If the cockpit voice and flight data recorders are removed for download, a replacement recorder will be required to keep the aircraft in a Bravo status. Only the Commanding Officer can authorized flight without a mishap recorder.

Contact G-WKS and G-SEA for coordination of the download and possible animations form the cockpit voice and flight data recorder data.

Audio downloads can be used to check ambient noises or to conduct frequency analysis.

Non Commandant Appointed MAB Investigations. When a mishap occurs and a Commandant MAB is not appointed, the flight data captured on the recorders can still be used for the investigation. The following procedures shall be followed to ensure the process and system are safeguarded:

- Contact COMDT(G-WKS-1) and (G-SEA) for authorization to remove the unit from the aircraft. COMDT(G-WKS-1) will consult with G-SEA and G-OCA to determine the need to remove the recorder.
- Figure 2-1 of the SEH Manual should be used for requesting download of recorders by any investigation other than a Commandant appointed MAB.
- AR&SC will download the data portion only from the recorder for the unit to conduct the necessary analysis.

- If audio downloading is required to check for ambient noises or to conduct frequency analysis, permission must be received from COMDT(G-WKS-1).

NOTE: Raw flight data and animations made solely from flight recorder data are not exempt from public release, provided they do not contain privileged safety information (e.g., MAB opinions, speculation or conclusions).

While transcripts of the relevant portions of the cockpit voice recorders are not exempt from public release, the actual cockpit voice recordings and the names of the individuals whose voices are captured may be safeguarded due to privacy concerns and thus not disclosed.

CHECKLIST # 29 – WKS-1 Advisor

A G-WKS-1 staff member will be sent to assist during the initial setup of an MAB and provide technical assistance during the first few days of the investigation. When a WKS-1 Advisor arrives at a mishap site, they are on site to provide assistance to the unit and the MAB. They are not to assume control of the MAB, conduct the actual investigation or to participate as a member of the MAB.

The WKS-1 Advisor is not a voting member of the MAB and shall not be involved in MAB deliberations.

Advise MAB President that you are there to assist with the "set-up" of the MAB and are NOT an MAB member. You will be on scene for approximately 1-3 days and should be considered the MAB President's focal point for any required Headquarters assistance.

The WKS-1 Advisor will report mishap information back to HQ, to include a formal Flag briefing upon return. Only non-privileged, factual information will be presented.

The MAB's charge is a daunting one. Individual MAB members will be looking for direction and they will expect you to have the answer. Some of these items will be discussed on the telephone during initial conversations before the MAB's arrival; however expect to reiterate those points.

Remember most MAB members have never been a part of a MAB or stationed at a Unit where a major mishap has occurred. They will behave accordingly and will need your advice and guidance help.

The following is an outline of items that should be discussed with individual MAB participants by the WKS-1 Advisor dispatched to assist in the "set-up" of the MAB. The lists below should be considered as MINIMUM. Each mishap will involve different topics and areas. Many of these items may be initially discussed on the phone as the MAB is being assembled.

<u>General Introduction</u>

- ✓ There is no rush to complete your investigation. The field is anxiously awaiting the investigation results, but a quality product is much more important. There is time to do it carefully.
- ✓ Expect a long, hard effort. Major accidents will take about two weeks of concerted investigative effort, plus reconvening to produce and format the MAR. It is not a vacation. It may be some of the most intensive yet most important work you do in the USCG. Be prepared for long days and hard work.
- ✓ Do not let personal prejudices influence your report. Keep an open mind. You might believe that you already know what happened. Guard against this mindset; it might prevent you from investigating all possibilities.
- ✓ Impress on the MAB their importance as mishap investigators.
- ✓ Advise the members to keep the prime objective in sight – to prevent mishap reoccurrence and protect life.
- ✓ Tell them their past performance identifies them as top performers and that is why they were selected.
- ✓ Explain clearly the Coast Guard concept of privilege. See Enclosure 10 and Checklist 13
- ✓ Impress on them the importance of the progress messages for getting the word out. See

Checklist 5 and SEH Manual Chapter 3.

- ✓ The role of the WKS-1 Advisor is supportive in nature and not part of the MAB's investigation, deliberations or witness interviews.
- ✓ The WKS-1 Advisor is a conduit for HQ assist in a variety of ways.
- ✓ Caution the MAB members to guard against on the spot determinations. Do not deliberate until the information gathering stage is complete.
- ✓ Safety, especially at the mishap site, is a must. See checklist 6 and 8.
- ✓ Refer all press inquiries to the District PAO staff. MAB members are not to act as official CG spokesmen.
- ✓ Discuss the following guidelines with MAB members:
    - Focus on the four Ms to point to causal factors; Man, Machine, Management, and Media (Environment).
    - Exhaust all other casual factors before arriving at human factors. If human factors is evident, continue to ask "why" and attempt to get to the root cause of the error. Strive to uncover the latent errors.
    - Consider yourselves a jury of your peers - - give aircrews and their performance the benefit of the doubt. Make every effort to eliminate other cause factors (e.g.; mechanical, design, supervisory) before assuming crew error.
    - Make recommendations for the good of all aviators. Do not let personal prejudices slant the MAB findings.
- ✓ Consider reviewing the MIG Checklists with the different members, especially where are questions.
- ✓ Take sufficient breaks to remain mentally fresh. Encourage members to maintain a regular workout routine.
- ✓ Over the next few weeks the MAB's work will be divided in to three phases:
- ✓ Qualities of a successful MAB Member:
    - An open mind.
    - A capacity for hard work.
    - Team member/worker.
    - Common sense.
    - Integrity.
    - Faith that the cause can be determined.
    - Curiosity.
    - Perseverance.
    - Knowledge.
    - Tact.
- ✓ The decision to convene a legal investigation rests with the Command and the District. Such a decision is not to be based on the contents of the MAR. This is not the job of the MAB president to conduct or request a legal investigation.

- ✓ Provide the FSO and MAB President with an example of a well written past MAR as a training aid. Bring copies (disc) of the sample report. See Enclosure 2 of the SEH Manual.

MAB President:

- ✓ In charge of MAB.
- ✓ Splits up tasks quickly to get maximum coverage early on in the MAB process.
- ✓ Review strengths of each MAB member and assign tasks accordingly.
- ✓ The FSO member may be the only trained interviewer and the only member CISD trained.
- ✓ Meet at the end of the day to go over the day's work and discuss the next day's plans. Do this every day!
- ✓ Log the hours the MAB works daily.
- ✓ Become the one and only MAB interface with the Mishap Command, G-OCA, G-SEA, and G-WKS-1.
- ✓ It will be a long, intensive work effort - - remember to take breaks. Don't feel pressured to "solve" the mishap quickly. It is not unusual to be on scene initially for two weeks.
- ✓ Encourage breaks. The members chosen will not be people you have to monitor for being idle. Set and observe crew rest and "eight day bag" rules.
- ✓ Try to arrange off-unit storage and protection of wreckage. G-SEA will pay for salvage and security costs. This may already be in progress as a normal result of the unit's Salvage Plan or Pre-Mishap Plan.
- ✓ As an outside observer, notice whether unit's crew and dependents are receiving required attention.
- ✓ Work-Life questions should be directed to the Work-Life staff (HSC(a-4)) at 1-800-827-4957, or after hours through HQ Command Center at (202)267-2100.
- ✓ Ensure command understands the Critical Incident Stress Debriefing (CISD) assistance options. The mishap unit CO should normally be the one to request this assistance. CISD assistance is available through the mishap unit's District Work-Life staff in accordance with COMDTINST 1754.3.
- ✓ However, witness interviewing takes priority over CISD counseling procedures.
- ✓ Following initial collection of data, while waiting for lab reports, tear down analysis, etc. and there is very little that can be accomplished. Consider adjourning the MAB and reconvening when appropriate.
- ✓ Have the MAB plan to reconvene at a mutually beneficial, low-cost area (ATC Mobile or Elizabeth City are preferred site; do not use Headquarters).
- ✓ G-WKS-1 can call to make initial arrangements. Do not wait around the mishap unit for information to arrive. Adjourn and reconvene as necessary.
- ✓ If an off-site move is not feasible, arrange for separate work area with a dedicated phones and computers, access to a printer and copy machine is also essential.

- ✓ Ensure witnesses are informed of confidentiality of privileged statements and that the "Witness Statement Promise of Confidentiality Advisory Form" is attached to each witness statement. See checklist # 27 and Chapter 3 of the SEH Manual
- ✓ Maintain tight control of MAR copies. MAB members, with the exclusion of the MAB president, are not authorized copies of the Mishap Analysis Report (MAR). This is not negotiable.
- ✓ Plan on an arrival message, a 72-hour progress message (from time of mishap), another 72-hour progress message three days after the first one, and a final progress message.
- ✓ Additional messages are authorized if warranted or requested by G-WKS-1.
- ✓ Each message must state whether or not any procedural, maintenance, or mechanical changes are indicated
- ✓ Safety of flight information should be released ASAP. Confer with G-OCA, G-SEA, and G-WKS-1.
- ✓ Message format is outlined in COMDTINST M5100.47 enclosure (5) and (14).
- ✓ Recognize emotional fatigue in MAB members. Especially in fatal mishaps, be aware of the strain that will occur and address CISD for board members.
- ✓ Consider whole days off after several long stressful days.
- ✓ The MAB President "owns" the wreckage until the analysis is completed. When finished, the MAB President releases the wreckage to the Legal Board or the mishap unit. G=SEA and G-OCA will arrange disposition of the airframe.
- ✓ Salvage is not your responsibility, but ensure photographic/video documentation takes place. G-SEA will provide funding and/or personnel as required.
- ✓ The MAB President does not ship the wreckage anywhere following analysis; that is the responsibility of G-OCA/G-SEA.
- ✓ The mishap unit is responsible for legal investigation and salvage message.
- ✓ Miscellaneous expenses/phone calls should be authorized on MAB member's orders. Discuss the need for Government calling card. Contact G-WKS-1 with any questions or coordination assistance.
- ✓ Become the POC for the AIM. Work with the fact-finding investigator to share access to non-privileged material. Share collecting and duplicating efforts.
- ✓ The MAB is essentially your air station with only department heads and only one aircraft. You own the aircraft and set the tone for the MAB.
- ✓ Encourage MAB members to take part in memorial service; do not give perception of an "us against them" mentality.
- ✓ Discourage non-MAB telephone calls from/to home units.

FSO Member:

- ✓ The FSO may be the only trained "investigator" on the MAB.

- ✓ Assist the MAB President by suggesting courses of action, member responsibilities, and initial organizational efforts if appropriate.
- ✓ Ensure that all MAB members follow proper interviewing techniques. Let the witnesses talk; try to put them at ease. Do not allow excited MAB members to "lead" the witnesses with slanted questions. See Checklist 7.
- ✓ Consider recording interviews to reduce note taking. This also allows other MAB members to listen to interviews later. **DO NOT** make verbatim transcripts.
- ✓ Expect to draft all the required messages.
- ✓ Provide an aircraft model to help witnesses demonstrate what they saw or remember. Move the witness back to where he/she observed the event. Success has occurred by putting a pilot back in the cockpit of the same model aircraft and then asking him/her to recall events.
- ✓ When complete make two electronic copies of the MAR. One to be forwarded with the G-WKS-1 copy and one as backup until G-WKS-1 confirms receipt of their copy..
- ✓ Expenses incurred for report production should be charged on the government credit card and claimed on travel claim. MAB orders should be annotated that "miscellaneous expenses are authorized in support of the mishap investigation.
- ✓ Act as the cheerleader and coach of MAB if necessary.
- ✓ Expect to draft all of the MAB's messages.
- ✓ Progress messages should be marked as "INTERNAL DELIBERATIVE WORKING DOCUMENTS SUBJECT TO REVISION BY THE FINAL REPORT".
- ✓ "Naval Flight Surgeon's Pocket Reference to Aircraft Investigation" can be a useful reference.

Engineering Officer Member:

- ✓ Assume that a mechanical failure caused the mishap. Eliminate all mechanical causes by inspection and/or analysis of appropriate parts.
- ✓ To the extent possible, prove each system was operational at the time of impact.
- ✓ Ensure fuel, oil, and hydraulic samples are examined.
- ✓ Discuss with MAB President the need for additional CWO/CPO maintenance expertise.
- ✓ Coordinate parts analyses through G-SEA using existing contracts to the greatest extent possible.
- ✓ Critical parts when shipped to contractors should be accompanied by a Coast Guardsman, as appropriate. Consider sending the MAB's assigned Engineering Assistant.
- ✓ An extensive salvage report is not required for the MAR. A simple description of damages and associated costs is sufficient. G-SEA's required Salvage Report is a separate document and the effort need not be duplicated.
- ✓ Assist the Flight Surgeon/Medical Officer with the life support system analysis.
- ✓ Examine aircraft records in detail. Ensure all required inspections were completed appropriately.
- ✓ Itemized list of destroyed parts and dollar values are required.

Standardization/Operations Member:

- ✓ Ensure aircrew logbooks and training jackets are up to date.

- ✓ Ensure aircrew was current in mission assigned.
- ✓ Be observant for trends in record review.
- ✓ Look for CRM use and mention either positive or negative actions conducted by the aircrew.
- ✓ Analyze aircrew use of proper procedures and appropriate maneuvers.
- ✓ Do not discount aerodynamics as a cause until eliminated by analysis.

Flight Surgeon:

- ✓ Ensure aircrew and dependents receive required care and/or counseling (keeping in mind that MAB interviewing requirements take precedence).
- ✓ Assume custody of body fluid samples. Reduce costs by sending samples for analysis only if warranted.
- ✓ Thoroughly examine all life support equipment. Lessons can be learned even if the equipment was not critical to the mishap. Contact G-OCA-3 for technical assistance. Discuss with MAB President the need for additional AST assistance.
- ✓ Written permission must be obtained from G-WKS-1 and G-WKH in order to use hypnotic or drug-assisted interviews. Such interviews should be considered only if critical safety-related information cannot be obtained by any other means. The subject must agree voluntarily and in writing.
- ✓ Armed Forces Institute of Pathology (AFIP) assistance is preferred for all autopsies. G-WKH-1 will coordinate AFIP assistance (202) 267-2073.
- ✓ Advise MAB on emotional state of individuals before interviews.

MAR format:

- ✓ See Enclosure 2 of SEH Manual.
- ✓ Keep the MAR accurate, bold, and concise.
- ✓ Remember, it is not a legal document. For example, a properly filled out "yellow sheet," can be noted by the MAB, the yellow sheet or a copy does not need to be included.
- ✓ Every witness statement does not need to be included unless it specifically adds to the MAR.
- ✓ Paraphrase long statements to cull out critical information.
- ✓ DO NOT make transcripts of witness statements.
- ✓ Reduce photography expenses. 8X10 photographs are not required unless detail is crucial. Each MAR copy does not require photograph reprints; photocopies are acceptable for advance copies (WKS, OCA, WKH, SEA, etc.).
- ✓ An electronic copy of the MAR on a disc is required when the MAR is completed. Forward disc to HQ with advanced MAR copies
- ✓ MAB members are NOT authorized to make or keep their own copies (electronic or paper) of the MAR
- ✓ Shred all notes, working copies, drafts, unused photographs etc. Unless G-WKS requests these be Saved. DO NOT send left over/unused documents, tapes, photographs to WKS, unless requested.

- ✓ Contact G-WKS-1 with questions!

NOTE: Privilege is granted on an individual basis. It is not automatically offered to all witnesses. There is no "blanket privilege".

CHECKLIST #30 – Document Markings.

The original MAR and copies shall be labeled in the center of the cover:

COAST GUARD (TYPE) MISHAP
AIRSTATION:
CLASS: (A or B)
DATE:
AIRCRAFT TYPE/TAIL NUMBER:
COPY(*)

* Mark according to TABLE 2-2 of SEH Manual (i.e., ORIGINAL, COPY 1/UNIT FILE, etc.)

The following shall appear on the MAR after the initial heading identifying the mishap

MISHAP ANALYSIS REPORT
FOR OFFICIAL USE ONLY
SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH
COMDTINST M5100.47 (series)

//
FOR OFFICIAL USE ONLY

WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT IS PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE AND MAY ALSO BE GROUNDS FOR DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL REGULATIONS
//

The following shall appear on the bottom of each page containing privileged information.

MISHAP ANALYSIS REPORT
FOR OFFICIAL USE ONLY
SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH
COMDTINST M5100.47 (series)

The following shall appear on aviation mishap messages immediately before the subject line.

//
UNCLAS FOUO //N05100// or //N03750//
WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION
USE FOR MISHAP PREVENTION PURPOSES ONLY
//

The following shall appear on all MAR endorsements.

WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION
USE FOR MISHAP PREVENTION PURPOSES ONLY

Mailing envelopes and Mishap Analysis Report covers should be labeled:

FOR OFFICIAL USE ONLY
SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH COMDTINST M5100.47 (series)

CHECKLIST #31 – References, Abbreviations and Other Notations.

Admin/legal/JAG investigations	Any investigation required by the Administrative Investigations Manual, COMDTINST M5830.1 (series)
Admin Manual	Administrative Investigations Manual, COMDTINST M5830.1 (series)
AFIP	Armed Forces Institute of Pathology.
AIR OPS Manual/3710	Aviation Operations Manual COMDINST M3710.
Aviation Medicine Manual	COMDTINST M6410.3
AVIATRS	**AV**iation **I**ncident and **A**ccident **TR**acking **S**ystem (Aviation Mishap Database System).
BBP	Blood Borne Pathogens.
COMDTINST M5100.47 (series)	USCG Safety and Environmental Health Manual, SEH Manual.
Chapter 2	Aviation Safety Program Chapter of the SEH Manual.
Chapter 3	Mishap Response, Investigation and Reporting Chapter of the SEH Manual.
CISD	Critical Incident Stress Debriefing, see COMDTINST 1754.3.
E-AVIATRS	Web based version of **AV**iation **I**ncident and **A**ccident **TR**acking **S**ystem (Aviation Mishap Database System).
Enclosure 2	Mishap Analysis Report (MAR) Format enclosure to the SEH Manual.
Enclosure 3	Medical Officers Report enclosure to the SEH Manual.
Enclosure 4	Mishap Analysis Board (MAB) Appointment, Composition and Procedures enclosure to SEH Manual.
Enclosure 10	Limitations on the Use and Disclosure of Mishap Investigations and Reports enclosure to SEH Manual.
Engineering Manual/13020.1	Aeronautical Engineering Maintenance Management Manual COMDTINST M13020.1 (series)
FAA	Federal Aviation Administration
Flight Surgeon's Guide	Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation (http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm.)
FS/MO	Flight Surgeon or Medical Member
FSO	Flight Safety Officer
G-WKS	Office Of Safety and Environmental Health, USCG HQ
G-WKS-1	Aviation Safety Division, USCG Headquarters

G-SEA	Office of Aeronautical Engineering, USCG Headquarters
G-OCA	Office of Aviation Operations, USCG Headquarters
HAZMAT	Hazardous Material
Helicopter Rescue Swimmer Manual	COMDTINST M3710.4
Life Support Systems Manual	COMDTINST M13520.1
MAB	Mishap Analysis Board
MAR	Mishap Analysis Report
MOR	Medical Officer's Report
MOU	Memorandum of Understanding
NTSB	National Transportation Safety Board
Office of Transportation Disaster Assistance	www.ntsb.gov/family/family.htm. NTSB site for Family Assistance for those affected by commercial or general aviation accidents or other major transportation disasters (1-800-683-9369 or Assistance@ntsb.gov).
PAO	Public Affairs Officer
SEH Manual	Safety and Environmental Health Manual (COMDTINST M5100.47 series)
Ship/Helo Manual	COMDTINST M3710.2D
USA	United States Army
USAF	United States Air Force
USCG	United States Coast Guard
USMC	United States Marine Corps
USN	United States Navy
VADR	Voice and Data Recorder, http://cgweb.arsc.uscg.mil/eisd/vfdr/vfdrindex.html
Witness Form	The "Witness Statement Promise of Confidentiality Advisory Form", Figure 2-1 in Enclosure (2).

Checklist #32 – Helpful Forms.

WITNESS LOG

Name (Title/Rank, Last, First, MI)	Address (Work and Home)	Phone (Work and Home)

SAFE INVENTORY/LOG

ITEM	DESCRIPTION	DATE RECEIVED

OVERSIZE OBJECT LOG/INVENTORY

File	Description	Date	Storage Location
1	LS Equipment - helmet/mask, survival vest, harness,		Building xxx
2	Engine logs		File Drawer xx
3	Misc Engine supports		Locker Drawer xx
4	X-Rays - Medical Records - MP 1		File Drawer xx
5	X-Rays - Medical Records - MP 2		File Drawer xx
6	CE Maps of Crash Site		SIB Conference Rm
7			

DISPOSITION OF PARTS SENT FOR ANALYSIS LOG

PART	POC	PHONE NUMBER	DATE SENT	DATE OF RETURN